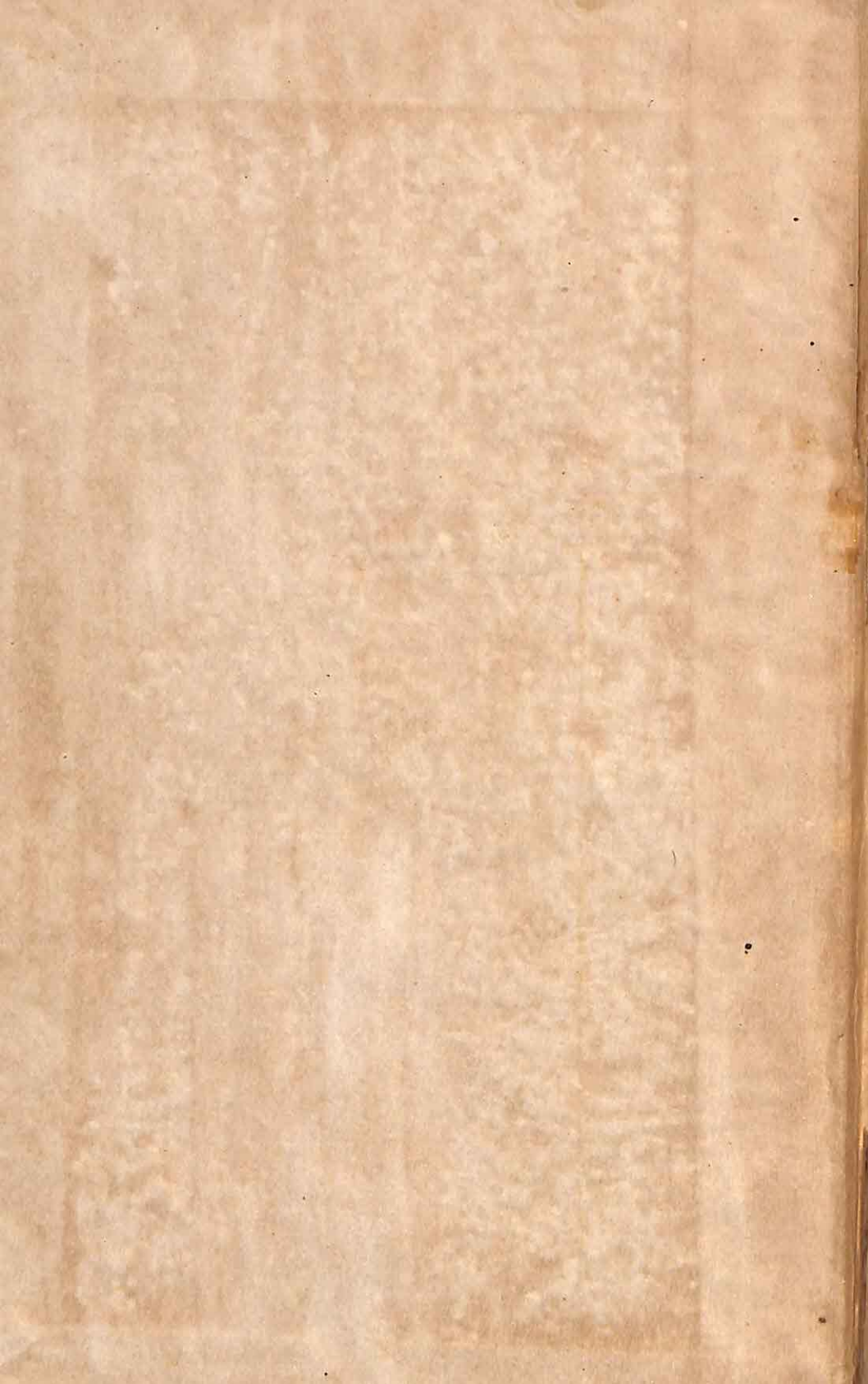


A TEXT BOOK
OF
PSYCHOLOGY IN EDUCATION
VOL - I

S. BHATTACHARYA
L. MUKHERJEE

SHREEDHAR PRAKASHANI
CALCUTTA - 6



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A TEXT BOOK OF PSYCHOLOGY IN EDUCATION

*Intended for B. Ed., M. Ed. and B. T. students of
Indian Universities.*

Vol. I

By

DR. SRINIBAS BHATTACHARYA M.A. (London), Ph.D. (London)

David Hare Training College, Calcutta

*Formerly Lecturer, Dept. of Education, University of Lucknow
and formerly Prof. B. R. Training College, Agra*

&

DR. LALITKUMAR MUKHERJEE M.A., B.Ed., Ph.D.

Cert. Internat. Educ. (Harvard); Cert. Educ. Meas. Adms. (Wash.);

Assoc. Br. Psy. Soc. (London); Unesco Expert Bangkok-Brazil.

Dept. of Education, University of Lucknow



SHREEDHAR PRAKASHANI

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PREFACE

The present volume is an attempt to cover a few aspects of psychology. In spite of the existing number of text books on psychology available in the market the writers have ventured to add one more on certain grounds. They claim that the present work would meet a longstanding need of the students of psychology and particularly educational psychology. It has been experienced that most of the books written on the subject have mainly concentrated on the psychology part without any reference to the educational bearing. With a view to combining both the departments the present volume has been written. Examples have been given from practical class-room situations and the subject matter has been presented in a lucid and non-technical manner covering all details.

If the work proves helpful to those for whom it is intended, it would be worthwhile to publish other volumes covering other aspects of psychology. It is, however, expected that this volume would serve as a text book for all the students of different universities taking up educational psychology as a subject at any of the levels. It would be gratifying if constructive suggestions on the improvement of the book are offered by these teaching psychology or education at any level.

S. BHATTACHARYA
L. MUKHERJEE

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The writers are deeply indebted to many for inspiration and criticism while writing the present volume. They owe a special debt of gratitude to Dr. S. C. Mitra, the late professor of department of psychology of Calcutta University for his valuable suggestions. The writers find it difficult to express adequately their feelings of gratitude and respect towards him. In course of investigation they have come in contact with different educationists both in India as well as abroad. They would like to take this opportunity to express their deep appreciation to all of them.

AUTHORS.

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CHAPTER I

Introduction

HISTORICAL EVOLUTION OF A SCIENTIFIC METHOD IN EDUCATIONAL PSYCHOLOGY

Early Attempts :

As man progressed in civilisation, it was but natural that he would enlarge his field of experience. Whatever a primitive man could not explain, he ascribed it to the 'supernatural'. Thus an eclipse was supposed to be the work of a demon. Even epidemics appeared to be caused by some minor gods or goddesses whom one worshipped at the time epidemics broke out. A large part of human experience was thus vitiated by what one would call blind superstition. In most of the early philosophies, therefore, we find that experiences were clouded by theological mysticisms. Such has been the fate of both Greek and Indian philosophies.

When did scientific method of learning begin? Perhaps many would think it to start with the great machine age. But that is true only for experimental science. In the realm of philosophy this scientific enquiry began when abject faith in the supernatural was given up in favour of a more rational approach.

In India, we can trace it from the days of *Kathopanishad* and other *Upanishads*. In *Kathopanishad*, the background is supernatural. Yama, the god of death is made to discuss the mysteries of life and death with one boy Nachiketa. This may seem rather strange, but the approach to the discussions are undoubtedly rational. Unfortunately, like other early Indian works we cannot trace its date with certainty. We may however assert that it must have been written somewhere between 2500 to 3000 years from today. This rational approach was continued by Kapil in his *Sankhya*. Though Buddhist legends contain many supernatural references, yet Buddha's own philosophic discourses have been singularly rational. Later philosophers like Charvak had been materialists no doubt, but there has been a rational approach in all their discussions all through. One of the misfortunes of early Indian philosophy, had been that the scientific approach was confined to enlightened few writers only, and side by side we find many following the mystic

and supernatural approach. When the dark ages of the mediaeval period came, the latter gained popularity and the former was forgotten or distorted. Even traces of scientific approach was vitiated with a lot of mysticism attached to them.

Another country where an attempt for scientific or rational study was made was China, but here too the fate has been similar to that of India. In Greece, attempts towards a rational approach seem to have been made from the time of Thales of Miletus who lived six hundred years before the birth of Christ. Thales disbelieved in supernatural forces and attempted to give a rational explanation to many things. Socrates (470-399 B. C.), tried to find out things by questioning and discussions. This has been since known as the Socratic method. This is, no doubt, a rational method of finding out things. His disciple, Plato (429-348 B.C.), held that knowledge of ideas should prepare every one for his proper role in society. This was indeed a rational approach. Unfortunately, Plato over-emphasised abstract ideas and rejected concrete reality as a mere shadow of this abstract idea. This naturally clouded the issues. Aristotle (384-322 B.C.) seems to be simpler. He had a definite and scientific way of dealing with things. The two methods of inquiry according to him are deduction, where we take a general statement for granted and see how far it is applicable to a particular problem we are interested in, and induction in which we are more interested in proving the general statement by taking a number of particular instances. He advocated both as methods for arriving at the truth. He advocated both as methods for arriving at the truth. He however held that as in many we are more interested in its particular application to specific cases.

In the Roman and Christian periods an envelope of superstition covered almost the entire atmosphere of thinking. Scientific attempts and explanations seemed to recede into the background. St. Augustine's method of introspection or self-analysis and the attempt of Aquinas to distinguish verifiable and scientific truth from unverifiable or religious truths are but flickers of light in the midst of prevailing darkness.

Real scientific approach however started with Renaissance and J. L. Vias (1492-1540) using inductive approach ushered it. This meant assembling a vast number of verifiable facts and their examination before truth can be formulated. It was due to this approach that notable pioneers of scientific thought like

Copernicus, Galileo, Bacon, Descartes and Issac Newton could come forward some with startling scientific theories, while others with a scientific approach to the entire problems of education. Perhaps we may say with a certain degree of accuracy that with renaissance the entire approach was changed from a speculative and contemplative study to a study in which experiment and enquiry formed the basic core. Perhaps we may study this age with greater detail in the following section.

Rival Schools of Thought :

The impact of a scientific approach was not limited to a study of physical sciences where things were concrete, but it soon affected the realm of mental science where most of the processes were apparently going in an unseen and unperceivable manner. John Locke (1632-1704) advocated the method of education through sensations. Unfortunately while Locke admitted the importance of the concrete and real things, he assumed the role of mind to be rather passive in receiving these sensations. Mind was thus considered to be a mere store-house into which sensation could be stocked. This naturally laid greater emphasis on the techniques of memorisation through artful presentation of the topic, but overlooked the dynamic and active role that the mind played in the acquisition of new facts.

Perhaps the advance made in the realms of chemistry had their repercussions in the domain of mental sciences. In chemistry it was found that elements combine together to form compounds. It was thus supposed that a similar process was going on within the mind also. Ideas get intertwined into associations and this would help in the learning process. For nearly two centuries, the theory of the associationists appeared to be the main theory applied to psychology. But side by side with it, a rival school of thought which emphasised the role of the mind as an active agent also sprang up. The followers of this theory wanted to give more freedom to the learner and advocated what we call today a system of child-centred education. The original pioneer of this school of thought was Rousseau (1712-78), but his ideas seemed to be too revolutionary to be applied to practice. The more practical approach came from his followers, Pestalozzi (1746-1827), Herbert (1776-1841) and Froebel (1782-1852). Herbert's theory of apperception in which a new experience could revitalise the older one, is a sort

of synthesis of the passive role of the mind advocated by the earlier associationists and the more active role of the rival school. This led him to evolve the five formal steps of learning viz., preparation, presentation, correlation, generalisation and application.

The psychological discoveries at the same time gave birth to a third theory where nervous system, muscles, fatigues and other body functions assumed a greater importance than was accepted by the associationists and the supporters of child-centred education. Muller's doctrine of specific nerve energies established a definite relationship between the stimulus that is received from the outside and the response that a certain living body makes. The nerve carries the stimulus, it was said, to the brain from which appropriate responses appear. Weber (1795-1874) developed this theory in a more comprehensive way. Since eye is the most important of our senses, Helmholtz (1821-94) confined his researches to visual experiences and established an explanation of our process of seeing. Fechner (1801-87) wanted to measure sensations and Seguin (1812-80) working with retarded children developed special techniques for the diagnosis of retardation.

The Evolution theory of Darwin revolutionised the entire outlook of biological studies. Heredity in interaction with the environment, is considered responsible for a dynamic process through which life proceeds. The effect of this startling discovery was naturally felt by the workers of the mental science. It was in 1869 that Galton set forth his famous theory on the heredity of genius. Wundt (1832-1940) established an experimental approach to solve the problems of learning. This was in 1879 just ten years after Galton. This inspired Stanley Hall (1844-1922), Herbert Spencer (1820-1903), Huxley (1825-95) and Charles Elliot (1834-1926) to make further biological and psychological studies based on the interaction of heredity and environment.

As Darwin's theory established a close relationship between human beings and the animal world, it was but natural that some scientists would try to find out an explanation of the learning process by studying the behaviour of the animals. The pioneer work of this side was made by Pavlov (1849-1936) who developed a 'conditioned response' theory. He studied the behaviour of a dog who was served with meat exactly a minute after the ringing of a bell. The dog was so used to both the stimuli, the ringing of the bell and the time interval of a second, that one day when

the bell was rung but no meat was served, saliva appeared not immediately when the bell was rung but a minute afterwards. Thus he held that the dog's response was conditioned by repetition of the process to both the stimuli together viz., the sound of the bell and the time interval. Pavlov's experiments were followed more comprehensively by Thorndike (1874-1944) and by Watson. They studied the process of learning of animals, rats and rabbits by using a maze. Thus side by side with the associationists, a rival school of behaviourists appeared, and they had made some notable contribution to the process of learning from a different angle.

Perhaps the clash of these two rival theories made the older associationists change their techniques. They tried to study the mechanism of learning reducing it to simpler process. In 1885 Ebbinghaus studied the process of learning, by isolating it from the varying and variable stimulus of meaning. He thus developed the Nonsense Syllable experiments and drew the curve of both learning and forgetting and also found the rate of forgetting. Kraplin's (1856-1926) studies of image formation according to varying stimuli of sensation and of mental fatigues can be cited as the notable experiments of this group of psychologists.

As Darwin's theory admitted the importance of heredity, it was perhaps natural that some psychologists would lay more importance on this aspect and stress the innate rather than acquired capacities. This developed rival theories of intelligence. While Stern considered it as a general ability which can work in all possible fields, Thorndike considered it to be a specific quality working in specific fields. Spearman on the other hand, considered it to consist of two factors, general as well as specific.

Measurement of Intelligence :

The idea that our abilities depend not so much on acquired characters as it does on innate and inborn qualities would naturally develop a conclusion quite different from what was evolved by associationists. Superior techniques of presentation will not, it was held, matter much when the inborn capacities differ. Consequently, learners' capacities should be assessed at first and this would set up the limits of his learning abilities. Perhaps by this assessment we should be able to group children appropriately, and this would mean an economy of teaching. Thus naturally psychologists were driven towards an objective study of intelligence. The motive of the pioneer of such studies, Binet (1857-1911), has

been the former. He evolved the test in 1905 simply because he wanted to group all children of approximately equal abilities into one class, so that while instructions are given, some students might not find it too easy and others too difficult. He evolved a set of questions which did not require book learning and applied them in the form of a test to a number of pupils. From the number of correct responses, he graded the class. Gradually as he grouped class according to the percentage answering the questions, the technique of the point scale evolved. Very soon Binet could divide his questions into groups, so that he could apply the easier group to less mature students and harder group to more mature ones. This evolved his classification of questions according to mental ages. Binet had however to 'Standardise' his tests by actually applying his questions to a larger number of a definite age, to prove that his classification of mental ages of children, who are supposed to be normal and who belonged to a definite age, to prove that his classification of mental ages had been correct. At first there had been some disputes but later on Binet's system of classification of pupils by means of intelligence tests have been accepted in the world. Binet's system has been adopted in countries outside France. The most notable adaptation has been that of Terman in U.S.A. Terman has further devised a method of comparing the intelligence of two persons even if they are not of the same age. This is by the method of finding I. Q. which is nothing but the quotient of mental age divided by real or chronological age multiplied by hundred. A person with a normal intelligence has an I. Q. of hundred if his mental age and chronological ages are equivalent. Those who are above normal in intelligence will have a mental age higher than their real ages and will thus show an I. Q. above 100. On the other hand, subnormal persons will have a mental age below their real age and will have an I. Q. below 100. Binet and his co-workers have thus objectively proved what Galton had predicted namely that genius is an inherited quality. Binet's test though not requiring book knowledge needs a certain amount of literacy and hence various performance tests have been devised to test the intelligence of illiterates. Wechsler by evolving two tests, one for verbal and the other performance type has shown that the intelligence revealed in the two fields is comparable.

As most of these tests had been of an individual nature their application involved much time and energy. Consequently group tests have been evolved in which the same test when

applied to the whole group will help one to select the right type of elements for a course. During the First World War the problem was to select intelligent soldiers for the army. This encouraged the application of a new type of group tests, one for literates called Army Alpha test and the other for the illiterates called the Army Beta test, in U. S. A. Culture-free tests to test the individuals of different and varied cultures have been evolved both in British Psychological laboratory (Raven's Progressive Matrices) and Chicago.

Meanwhile the definition of intelligence has undergone some change. We have already noted that Stern held it as a general capacity. A person who is intelligent in one field is intelligent everywhere. Thorndike, on the other hand, considered it to be a specific capacity. To him a person considered intelligent in one field may yet be below normal in another. Spearman had earlier noted a two-factor theory, partly general and partly specific. Present theory of Vernon admits innate intelligence or general factor as the base which helps one to adjust into any field, but above it is a group factor which adjusts one into four different fields which may not be mutually exclusive, namely verbal, performance, numerical and spatial. This is followed by minor factors which further subdivide the general group ability into a number of specific abilities and this again branches specific abilities or skills into specific fields.

Twentieth Century Approach :

The impact of psychoanalytic approach of Freud and his co-workers in the field of education has been rather indirect. It was felt that stressed sexual desires or repressions are the cause of behavioural problems. Freud stressed redirection of individual's motive and free expressions. He also stressed the study of an organism as a whole with no distinction between physiological and psychological approach. Further he advocated the study of the basic urges in the realm of the subconscious field which he called 'id'. Two of his followers who later parted with him are Alder (1870-1937) and Carl Jung. They have also made some notable contributions. Alder's theory of will as the driving force and the role of inferiority complex that causes behaviour disorders and checks learning is a contribution which no educator can overlook. Jung advocated the study of neurosis and subsequently divided individuals into two groups, introverts and extroverts, who evidently need different types of treatment.

Among the noted physiological experiments of this century, those of Sherrington regarding the function of neurones, of Troland in the field of vision, and of Lashely in motor area though limited in the field, deserve mention.

A new approach to the role of learning has been established by the Gestalt school of thought which denies that learning is ever possible through isolated sensations. The impact of the total field of experience helps us to learn. The pioneer in this field theory was Wertheimer (1880-1943) but more important researches have been carried out by Kohler, Koffka and Lewin who studied animal behaviour. Gestalt means shapes. These psychologists hold that one sees shapes as well as colour and shades. Sensations are not merely raw materials. If they are themselves unorganised and uncombined, mind tries to pack them together and to give them a definite shape. If a certain music is played in concert in which a number of musical instruments are being worked, we can, when the same concert is played again but with one instrument missing, find out the difference. The total effect produced by so many instruments is disturbed by the removal of that single instrument. Gestalt psychologists do not object to the objective methods employed by behaviourists, but they do not think that responses take place in simple reflex actions or conditioned reflexes. Koffka said in 1935 that we should regard behaviour not as composed of responses to stimulus but governed by the entire field. The field or direct experience has two poles, Ego and the Environment. The child does not make any distinction between self and not self, except that some things are before him and some things are behind him and he is in between. The environment that appears before a person whether a child or an adult, may not be the real environment; it may partly be an environment reconstructed by him from what appears to him. One responds to this apparent environment. Educationally Gestalt psychologists have stressed the importance of insight rather than blind trial and error process.

Formic psychologists insist that the most important part of our responses has to do with motives and urges. They make purpose the fundamental thing in responses. In 1923 Mac Dougal (1871-1938) held that an activity persists but with all persistence there is a variation. It terminates as soon as the goal is reached. Since 1908 he has stressed on few major instincts namely (a) hunger, (b) disgust, (c) curiosity, (d) fear, (e) anger, (f) mating propensity, (g) gregarious propensity, (h) self assertive propensity to dominate,

(i) submissive propensity, (j) constructive propensity, (k) combat, (l) laughter and (m) acquisitive propensity. Mac Dougal has further shown that these primitive instincts are modified by learning and experience. Thus he has held that since learning takes place in a purposeful situation, it is able to modify the primary instincts of a man.

L. L. Bernard has shown in 1924, that instincts are themselves complexes differing from culture to culture, and acquired by an individual according to the social environment in which he is placed. In Bernard's opinion, social environment determines the goal and provides the motive force of our action. Educationally therefore it is the society that fixes the standards and forms of our behaviour. Gardener Murphy in U.S.A., Fleming and Eysenck in England, are now busy in studying this social aspect of psychology and it is possible that though most of their researches are in social psychology, yet the educational implications of those researches will not be inconsiderable.

Organismic psychologists differ slightly from the Gestalt school. While they study the individual reacting as a single biological entity, they do not consider the environment as a single whole. They hold that reflexes cannot be understood in terms of isolated mechanisms, but rather as acts of the whole organism. Twelve years later in 1890, William James held an identical view, and said that though with each personal consciousness thought has changed, yet a continuity is being maintained by the organism as a whole in all its behaviours. Mary Calkins (1863-1930) invented an important method of paired associations for the study of memory. Stern, has suggested that an individual has two goals, one he called intrinsic goal which is bound up with his individual nature, and an adopted goal which represents his adjustments to the social environment. Spragner in 1928 has enlarged the goals into as many as six, viz., theoretical knowledge, aesthetic, economic or practical, religious or spiritual, social or sympathetic and managerial. The reaction of an organism to any situation will be directed to one of these goals. Educationally, therefore, all our efforts should be to evoke the child's response in terms of one of these goals. Allport's studies in personality also consider an individual as a total organism. He feels that the entire personality comes into operation and we cannot study one's behaviour unless we keep in our mind the total aspects of the entire personality. It is the personality difference that causes two individuals to behave in different ways when the situation is the

same. Another notable change in the outlook of psychology has been caused by the study of endocrine glands which affect our personality and modify our behaviours. Thyroid, Pituitary and Adrenoid glands not only control our behaviours, but an over-developed thyroid makes a person active and energetic and under-developed thyroid makes him dull and disinterested. Defects in the Adrenoid glands make a person dull and foolish. Perhaps a further study of these glands may open new vistas of knowledge and explain the underlying difference in the personalities showing why two persons react to the same situation in two different ways.

Summary :

Thus we find that from a mere speculative subject, psychology in general and educational psychology in particular, has emerged as a practical subject. Perhaps this scientific approach started from the time when man tried to find out the root cause of everything. It is this curiosity that brought about a scientific bent of the mind. So far as psychology is concerned this approach came later than in other natural sciences.

The researches in Chemistry and Biology affected the mental science, and the approach to its study has been much influenced by the advances made in these two sciences. Early studies in associations bear a close similarity with chemical associations, just as early studies in behaviourism have been influenced by the idea that a man is after all an animal, whose responses can be trained or conditioned according to the stimuli presented to him. The two schools differed considerably in placing heredity and environment in their proper places. While associationists emphasised environment, the behaviourists emphasised heredity. Experiments made on intelligence and intelligence tests also revealed individual differences and this has improved our methods of classifying students.

On the whole twentieth century approach has been towards integration. While one school considers that an individual reacts to the total environment, the other school looks to the organism as a whole entity. Perhaps there may be some truth in both the views approaching towards the same end, perhaps the study of endocrine glands and their functions will reveal the true secrets why different individuals react to the same situation differently. With this integration we may reach our desired goal one day, and find out what was been preserved as a secret so long.

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EXERCISES

1. "Where as nineteenth century was an age of schism, the twentieth seems to be an age of reunion". How far does the study of the history of educational psychology reveal this ?
 2. Discuss the various influences that finally turned psychology from a branch of philosophy into a branch of mental science.
 3. How do you think the Gestalt and Hormic points of view will be ultimately reconciled? Answer this question keeping in view the basic assumptions of both the schools of thought ?
-

CHAPTER II

SOME BASIC CONCEPTS OF PSYCHOLOGY

(A) *Heredity and Environment:*

Every living being is born with a definite physical form and the manner in which he would react with the outside environment is in a general way predetermined. This he acquires not from his parents but from a long line of remote ancestors. It is heredity that determines how a kitten would thrust its paw instinctively on a moving object or that a young fawn would jump as soon as it hears a dog's bark. We have seen in our own country that a cuckoo lays its eggs in the nest of a crow and the young cuckoo is reared by the crow. Yet as soon as it becomes old enough to fly, it flies to its real parents and may have to fly hundreds of miles through lands it has never seen. No body directs the cuckoo, and yet somehow it knows its directions all right. This is an inborn instinct which the bird has secured through heredity. What is true of lower animals is equally true of human beings. Certain physical characteristics are racial, thus all Negroes are born with a dark skin, curly hairs and thick lips. Mendal experimenting with green and white peas has shown that out of the four peas born of cross-fertilisation, one has the distinct characteristics of the white and the other of the green, while the other two had one characteristic which is prominent but the other present in a latent form. This latent characteristic may, however, come out in the next generation showing a characteristic which none of its immediate parents had. This has also been seen in the case of human beings. Thus in a mixed race of white and negro parents, it is quite possible that only one of say, four children has a distinct white complexion while the other three are black, evidently however only one is genuinely black and the other two have latent white tendencies. Now, if one of the latter marries a black girl, he may yet have a white child, because of this latent white tendencies. It appears that body is formed out of semetic and ovular cells called gens. But the gens are mere containers. The actual characteristics are determined by chromosomes or carried by inherited tendencies. These carry the tendencies that have been conveyed to them through generations, and not those which have been acquired

by its immediate parents. What is thus acquired is diverse. It includes the pigment of the skin, the type of the hair, jaw bones or muscles, some of the diseases and even such qualities as baldness. It has been shown that children born of tall parents are tall and as they grow up they continue to be tall. Similar is the case of those born of dwarf parents. Patrick measured the height of certain young children in Australia in 1911 and measured again in 1950, and found that the children whose parents were occupied in professions were found to be somewhat taller than those whose parents were engaged as labourers. This experiment prove that even the tendencies acquired by one's immediate parents have some influence to the immediately next generation.

It was held that intelligence is also an inherited capacity and while some persons are born bright, others are born dull. It is on this hypothesis that intelligence tests of Binet and others were devised, and it was held that intelligence quotient is unchangeable. It has however been found that this is not exactly so, some of the children reared under unfavourable circumstances register a lower intelligence quotient so long as the conditions of their upbringing are not changed. As soon as they are taken into more congenial foster homes, their intelligence quotient shows a rise. It is perhaps right when one says that development of intelligence between 2 to 12 years is more conditioned by heredity, but after that time environment shows a greater influence.

The above example will show that heredity alone is not the factor that determines nature. Had it been so, all efforts of improvement by providing a better environment would have been futile. A good schooling improves the achievement of students mainly by providing a better environment, conducive to greater effort on the part of the students. Even rearing in a good family produces influences all of which are not hereditary and many are merely environmental. When the child of a good singer becomes a good singer himself in later life, the tendency is not wholly or even mainly inherited. It is because in the house of a good singer the child is always in musical environment from its early life. Anastasi has shown that children born of the same parents being reared in different environment show certain different characteristics which go to show that heredity alone cannot be responsible for all characteristics and environment has its own distinct influences. Thus our present knowledge shows that both heredity and environment are responsible for our

growth and no body can think of one to the exclusion of the other.

(B) *Instincts and Emotions:*

Original tendencies to action which depend very little upon learning and are mostly inherited connections to nervous system are called instincts and reflexes. In a reflex the stimulus is specific, and the reaction is prompt and definite. It is not readily modifiable. Instincts are however more complicated than reflexes. Some psychologists hold that instincts are just series of reflexes, one reflex furnishing the stimulus to the next. Instincts are of course inherited and can only be partially modified. Instinctive reactions are more apparent among animals than among human beings. Mention has already been made of a kitten raising its paw to strike a moving object, that is, an instinct helps it to grasp its prey. Watson found sneezing, crying, sucking, grasping and responses of eyes, hands and feet as instinctive behaviour of children. Of the complex instinctive patterns he found that instincts of imitation, rivalry, sympathy, or jealousies are qualities that have to be learnt. Watson held that the tendencies to obtain food, shelter, rest, sleep, play, sex, defence and attack are specific instinctive reactions. Woodworth, however, proposes a three-fold classification as follows:—

Responses to organic needs: thirst, hunger, shrinking from injury, fatigue or sleep.

Responses to other persons: gregariousness, mating or seeking companions, parental instinct.

Non-specific or play instincts: locomotion, vocalisation, laughter, manipulation, self-assertion, submission.

Those who extol instincts hold that the original tendencies are the general backgrounds of human civilization. Being gregarious by instinct, man feels satisfied in working with others. As he works he gradually learns. Thus our social institutions, our language and our ways of living have all evolved out of this basic instinct. In all our efforts of education of the individual therefore, we must take the help of one of the instinctive drives. We may thus follow the track or the line of least resistance and get the maximum benefit. If we oppose the instinct, we shall constantly be thwarted and the results will be unhappy. The critics of this view, however, hold that there is a wide divergence of opinions among psychologists as to what we may call instincts. Hollingworth says that we inherit only certain vague

tendencies of unrest and these are not specific. This vague tendencies of unrest cause certain responses whose nature is determined by the environment. In other words, the responses are not inborn, but are determined and modified by the environment. The Gestalt psychologists are equally sceptical of the importance of instinct.

Emotions are more complex reactions which are characterised by stirred up feelings of the whole body. Emotional behaviours may be instinctive or habitual, depending on the amount of learning involved. Fear, anger and love are according to Watson instinctive emotional behaviours. The child cries when a loud noise is made, or when it is given a sudden start, simply because the emotion of fear is excited. In the same way when the arm of the child is pressed, rage is characteristic. Stroking likewise produces loving emotions. Later on, fear may be excited by the sight of a dying person, anger by refusing the child some toys and love instincts by its attachment to a pet animal. In such cases the fixation of the emotion to these situations or objects are clearly learnt. Expressions of emotions include facial expressions, higher pulse beat or reduction thereof, changes in respiration, and this affects the digestive system too. Some emotions like anger are exciting and raises the pulse beat or respiration rate; others are depressing and reduce them.

Two of the major theories of emotion are James Lange theory and Cannon's theory. The former holds that bodily disturbances are caused by certain situation and the mental reactions that follow are primarily caused by these bodily changes. Instead of saying that a man runs seeing a tiger because he is afraid, James Lange theory would say that running on seeing a tiger is an instinctive action, and the emotion of fear is the result of the motor action. Similarly we do not feel sorry and cry, but we feel sorry because we cry. Cannon's theory on the other hand, traces the emotion as being caused from the action and reaction in the cerebral cortex and diencephalon, i.e., in brain itself. When these excited discharges are sent simultaneously into two directions, that which goes to cortex affects the mental state and that which goes into motor nerves causes bodily changes. In other words, the bodily and mental changes are produced simultaneously. The main criticism against James Lange theory of emotion is that it considered emotion as the mental aspect and behaviour as the physical aspect, and considered the two to be separate affairs. Cannon's theory is based on experimental

researches with animals, where it was seen that with the removal of the fore-brain, no change of emotional aspects of the animals was seen. But with the removal of thalamus, emotional activities ceased, thus proving that reactions on the brain are involved in emotional reactions. None of the two theories, however, explains all the reactions connected with emotions.

Summary:

Heredity or the influence of the abilities being passed on from one generation to another held the sway with earlier psychologists who deviated from Locke's ideas that mind is born blank and that education can do anything and everything. That many of the traits are inherited can not be doubted, for otherwise we would not get the racial characteristics of complexion, shape, lips or hair. We also find that some diseases are inherited and earlier educators considered that intelligence is also an inborn quality. This naturally gave rise to the theory of a very limited scope for education. Education means providing suitable environment for learning. Later researches showed that environment, however, has influence, not only in improving intelligence, but many of the achievements are due to environment. In fact, what we mean by a good breeding is not entirely the result of a good heredity but a superior environment which parents, other family members and schools may provide. Our present theory, therefore, acknowledges the original endowment that heredity provides, and at the same time does not neglect the modification or improvements possible through environment.

Instinctive actions are those spontaneous actions which a child acquires from the very birth, and which have not to be learnt. They are thus quite akin to reflex actions, and that they are more complex and unlike reflexes involve a chain of reactions, one leading from another. Woodworth has divided them into groups: those relating to organic needs, those connected with social needs and non-specific or play instincts. Watson has given another list of reactions. The importance of instincts in educational psychology lies in the fact that if we base our learning procedure along the instinctive urges *we are able to derive much benefit*.

Emotions are also complex reactions which are characterised by stirred up feelings. Perhaps in the original instance they are akin to instincts, but learning changes both their nature and content. Emotion causes considerable physical changes like

changes in pulse-beat and respiration. Some are exciting emotions providing us greater energies, while others are depressing ones causing numbness. James Lange theory of emotions states that physical activities or bodily changes occur first, and mental reactions are merely caused by them. Cannon's theory on the other hand, states that a stimulus is simultaneously carried to two parts of the brain, one of which excites the physical and the other mental reactions. Thus the two act together. Neither of the two theories, however, explains all the reactions.

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EXERCISES

1. Discuss the part played by nature and nurture in Education.
 2. What are chromosomes and genes ? How are parental traits passed on to the offspring ?
 3. Distinguish between instincts and emotions and explain the importance of each in educational psychology.
 4. What is James Lang's theory on the origin of emotions ? How is Canons theory a better approach to explain emotional reactions ?
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CHAPTER III

PHYSICAL DEVELOPMENT AND ITS CONSEQUENCES

Growth of Height and Weight :

It has been seen that height and weight of children do not follow a regular order. Had growth been regular, perhaps it would have been considered to be a phenomenon for which there would be no worry. But it is seen that growth is more rapid during early infancy, than at any other time in human life. The rapid growth of early infancy slows down till late in childhood when the growth for a period of six months or so is almost nil. Then again there is another phase of rapid growth, though not so rapid as at first, during adolescence. It is seen that at this stage some children become unduly tall, others unusually fat and a few may combine both the attributes. After adolescence the growth slows down. In fact, it is much slower than in later infancy or boyhood. With the approach of adulthood physical growth seems to stop altogether.

This erratic growth has its natural effects on the behaviour patterns of the children. A young child always feels somewhat inferior because of its diminutive size. He knows he is small in stature as compared with the adults. His one ambition in life is to be a big man one day. When he imitates the adult ways, perhaps at the bottom of this urge lies his feeling of inferiority. Sometimes his imitative measures may cause inconvenience or embarrassments to us. A child insisting on wearing his daddy's shoes to become a daddy may cause inconvenience or annoyance to his father. But punishments will not cure him, for at the bottom of this wearing the shoes at the time when the daddy wants it is the urge to grow as big as the daddy. With slowing down of the growth at the later infancy comes a stage of self-complacency. The child may have his inferiority feeling still, but somehow or other the urge is not strong and less manifest. Perhaps the urge finds its outlets in a number of *make believe* games and in the desire to listen to the story of the handsome prince who emotionally becomes identified with the child's own self. Thus as growth slows down, the child's urge of claiming an equal status with the more grown up is manifested more in recessive ways than by mere aggression.

Our problem becomes more complicated when we find that all children do not grow at the same rate. Some children are too small for their ages, while others are too big. A child who is rather small for his age receives a different type of treatment from his elders. He is always treated like a baby, perhaps this may persist when the child makes up for the earlier slow growth and this influences his upbringing considerably. He will always remain an eternal '*Peter Pan*' always dependent on others and always hesitant to take responsibilities in life. This will also be reflected in his social attitudes in the adult life when he will be ever dependent and hesitant. On the other hand, an overgrown child is detested like an 'ugly Duckling' of Hans Anderson's story. He will be expected to take care of himself from a very early age and this will make him fairly independent and self-reliant and perhaps a bit defiant also.

Growth differs not only individually, but in a more general way between the two sexes. There is a marked sex difference manifest in the process of growth. Though ultimately in the adult stage men are taller and heavier than women, yet in childhood we find that girls grow more rapidly than the boys. There is a greater difference between the height and weight of boys and girls at eighteen than we find at the age of nine. This difference is manifested also if we take the ratio instead of actual difference. Girls, it is found, advance more rapidly than boys upto early adolescence and this difference in physical maturity produces a difference in emotional and social spheres also. Girls are perhaps a bit sophisticated and a girl of nine will look down on a boy of her own age group as a mere baby. The boy will perhaps compensate this inferiority feeling by showing a spirit of defiance towards girls of her age group. Psychologists have found that between the ages of seven and fourteen, the latency period called by Freud, there is a hatred among children towards the company of the other sex. To what extent is this feeling of contempt and defiance due to growth and difference and is responsible for this antipathy, is a matter of research which has not yet been undertaken on a wide scale.

The effect of training or of the opportunities for learning is also influenced by the child's phase of growth. Maturation plays an important part in acquiring speed and precision in a child's movement. Therefore, educationally we must look at the phase of maturity in a particular child before we may plan a course of education suitable for him. A child who is developing

only slowly, may not perhaps be fit for the type of education that is being given to his more fortunate and normally developed companion. One must first correct his process of slower growth before one can plan his course of education suitably. It is no use lamenting over the fact that a child of three who is otherwise immature is found to lisp while others of his age group have outgrown this habit. Perhaps though chronologically he is three, yet physiologically he is still a year and a half old. One must try to push forward, not unnaturally of course, but by proper nutrition and stimulation.

We must further remember two more important facts which have a great significance in children's behaviour at any stage of its growth. We are apt to consider a child's behaviour natural and healthy only in so far as the behaviour seems to be connected with either his earlier upbringing or is consistent with his immediate needs for the moment. We forget two important facts. Firstly, what is learnt at a given age level is not carried over *in toto* to the next age level. An insect in the caterpillar stage has one way of adaptation to the environment which is completely different from his way of adaptation in the adult stage. In the same way the adjustment of the infant level is not helpful on all counts and details to the adjustment in the adolescence. Some boys can dance very well, by keeping a rolling bottle under a plank, they show a fine sense of balance in this way. They may have received applause in their childhood for this fine sense of balance and dexterity but it will be foolish to expect them to perform this acrobatic feat during adolescence when they have become so fat or so tall as to make such balancing impossible. Probably their movements have also slowed down. They are conscious of their loss of power, and by our expressed reference to the power they have lost, we merely add to their embarrassment, and make them still more maladjusted to their immediate surroundings. Likewise, a girl who was a fast runner or one who performed nice rope tricks during childhood will be physically incapable of doing so, when the chest growth or growth of hip regions during adolescence prevent her to show the same amount of physical activity.

Another thing that we must bear in mind is that children at one age group are not concerned merely with such readjustments as are necessary for a particular age group. They also try to make their readjustments ahead of their age and developments. Children thus always show an urge to follow some of

the methods that are suitable for their adjustment at a later age. When children of a certain age behave in a sophisticated way, we are not apt to chide them for being a little audacious and perhaps cheeky. We forget that at the bottom of their effort lies the urge of preparing themselves for a more satisfactory adjustment for future.

At all stages of growth, therefore, developments that take place should not be considered only in terms of serving a child's present need; they are also preparing him to meet his future needs as well. The changes in adolescence prepare a child for adulthood, for instance. It is not unnatural, therefore, that an adolescent will tend to behave in some ways like an adult. He will not always submit to our guidance in a meek and submissive way. He may perhaps be critical, especially if we ourselves do not observe what we profess in our actual behaviour. It may appear he is not willing to pay the due respect for a superior age and experience, but if we realise it in the context of his assertive personality, we may be a bit more charitable. This may reduce conflict which often takes place between the youth and the old which is often caused by misunderstanding.

Motor Development and its Consequences :

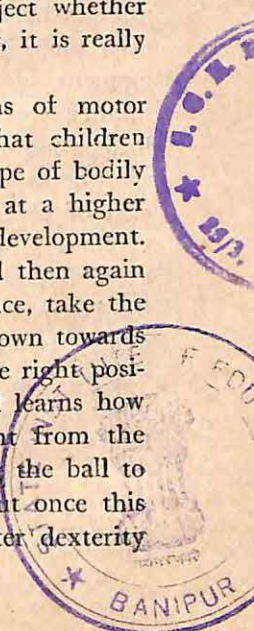
Motor development is important from educational point of view. It is not only linked with other aspects of the development, but also it helps a child to assert his personality. From the very moment a child is trying to reach an object whether by stretching its hand or by crawling or by walking, it is really asserting to control its environment.

We should also consider the specialised forms of motor developments. In many performances, it is seen, that children will concentrate for a time on the acquisition of a type of bodily skill at one time and then move on acquiring skill at a higher level. But we must not always consider this as a development. Development follows from the whole to the part and then again from the part to another whole. We may, for instance, take the example of a boy who is not able to catch a ball thrown towards him. Perhaps he is not able to keep his fingers in the right position. He at first concentrates on this little skill and learns how to control his fingers. This is clearly a development from the whole to the part, from the entire process of catching the ball to the function of controlling fingers in the process. But once this control is acquired, the child uses it to acquire greater dexterity

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in playing cricket in which the specialised skill, the control of fingers as well as the more general skill of catching the ball are mere parts of a more generalised activity.

There seems to be a sex difference in the process of acquiring skills. As a rule boys surpass girls in most of the trials of strength and speed from an early age. A boy might be shorter and lighter than a girl of his own age. Yet in a game of tug of war or in high jump the average performance of a boy will be much ahead of the average performance of a girl. When we talk of the sex difference, however, we must not forget the wide variation of the individual difference that exists within the same sex. The quickest, strongest girl may be much ahead of an average boy of her age group, but the average performance of a girl in trials of strength and speed will be somewhat below the average performance of a boy. This difference tends to increase as children grow older, and on an average, boys tend to grow taller and heavier than the girls of their own age.

The individual differences in motor skills between boys and boys and between girls and girls must be taken into account. Some are mere weaklings, while others are definitely superior either in strength or in speed and they easily become the leaders of their groups.

At a very early age, an infant tries to reach an object and then it learns to crawl and then to walk. These abilities are preceded by corresponding muscular developments. At first the muscles of the neck and the upper extremities are developed, then there is the development of the trunk and lastly the development of the lower extremities. When slightly older, the infant's motor activities are confined to such development as locomotion. As the infant grows older, he is interested in running or in jumping, in climbing or in pushing, in the manipulation of objects or in throwing things. This gives him practice to control his environment. Between the ages of three to four, a child likes activities viz., playing as policeman (generally true for boys) or playing with dolls (more common among girls than among boys). These are perhaps carried forward to higher ages except that the play becomes realistic and life-like. And in place of individual activities, they are played in groups. At a later age a child often tries to improve his earlier skill.

A spirit of competition enters into the children's activities as they grow. The boys and girls try to keep a record of their performances and outdo their past achievements, if possible. In

the middle school stage, and perhaps even in the upper primary classes, organised team work with individual rigid rules and allocation of definite roles for each individual player, becomes more prominent features. From the time of birth right up to adolescence the number of play or activities into which a child engages himself should increase. But with the emergence of the adolescence period there seems to be a break, and the adolescents generally grow sedantary, engaging themselves in a considerably limited motor activities than do the younger persons, and the same habit of more sedantary life is continued in the adult stage especially of the girls.

It must, however, be noted that the motor activities and the games that children prefer are conditioned not only by their age but by the facilities available to them also. Interests are created in the minds of children by the facilities available at home and at the school. They are further conditioned by the cultural traditions of the particular socio-economic group they belong to. Children coming from richer families may have tastes for expensive games like tennis or cricket. A game popular in lower socio-economic group may be tabooed by those who are higher up in socio-economic hierarchy. Sex differences are also created by cultural traditions. It is seen that in later infancy, boys will like to play the role of traffic police while a girl will be more interested in her doll house. This is not merely due to difference in initial interests. Perhaps it is partially conditioned by social standards of the community as well. Perhaps in the earlier infancy a boy who was interested in a doll house was sneered as too girlish, and a girl who played traffic police was called a tom boy. This remark of the elders naturally discouraged them and at the end, we find them playing and preferring the roles appropriate in every respect.

Facilities provided for the games depend not only on the cultural traditions but also on the economic conditions. Children living in slum areas are sometimes engaged in more aggressive types of games on their streets which may involve tearing each other's hair. The reason lies in the fact that they do not have large play grounds and a variety of equipments which would have diverted their energies to more socialised types of games.

We must also consider the type of activity that will motivate a child at a particular age not only in terms of the interests at a particular period, but also in terms of the activities he hopes to follow in a later period. It is found that hobbies or leisure-

time activities of the adult life are largely conditioned by the tastes created in them at an early age, probably before adolescence. The very fact that a well-to-do family is able to provide a child with facilities and opportunities at various enterprises, may help a child to acquire varied tastes. This will provide him with a variety of leisure time activities in later life.

The problem of motor activities is not merely of an educational but perhaps of a sociological importance. We can trace the origin of many acts of juvenile delinquency and also of many crimes committed by grown up people. The limited opportunities of healthy diversions provided in the slums, where a child has been forced to spend his early days, do not allow these diversions created for them in their early life. Let us plan and organise the leisure time activities of all children, no matter whether they live in places or in slums, by opening children's parks in slum quarters and by suitably guiding them, so that the children would prove healthy, constructive and social. The money we shall spend will help them to be better adjusted and more useful. Perhaps a rupee spent in the way will mean ten rupees saving in police and jail departments some ten or twenty years hence.

Changes in the Adolescence and their Consequences :

Adolescence is a period of a great physical change. As we have already noticed, the rate of growth in height and weight slows down before adolescence and becomes rapid once again. The change is not uniform in all individuals. Boys and girls differ in their rates of growth and within the same sex some individuals grow more rapidly than others. Those boys and girls who grow more rapidly than others are apt to grow tired very soon, and appear to grow a bit dull and lazy also. It seems as if all their energies are being diverted to the process of growth, and that the growth in a physical sense is being compensated by deficiencies in the powers of endurance and in mental activities.

The sexual characters which are connected with this period are of tremendous significance, both emotionally as well as sociologically. During adolescence, while changes in the body are taking place, a boy or a girl appears somewhat uncouth. The growth of beards among the boys often looks shabby. The development of the chest regions and the hip regions of the girls are likewise somewhat graceless at the time of development. The sweet voice in early childhood of the boys becomes hoarse and heavy, but this is not sudden. Perhaps he retains a high pitch in

some of his cries and at times his voice quakes and gets suddenly heavy often in the midst of his speech causing no little embarrassment. The girls' menstruation period is first apparent in this turn and this natural phenomenon makes her so afraid, producing an unnecessary guilty feeling that very often she is unable to confide this to her mother or other adult females.

The result of all these changes is that a boy or a girl becomes self-conscious or shy. He or she is no longer able to mix with younger children for having outgrown them. Nor is it yet possible to find a place among the adults, for adults are not yet willing to accept such a person properly. The boy or the girl thus feels oneself as an outcast. This makes most of the adolescents unduly shy. A few, however, become unduly forward, showing an aggressive and overbearing manner.

At this stage troubled with bodily changes and social isolations, the adolescent tries to live in a world of imagination and of day dreams. Perhaps he or she creates an imaginary mental world to compensate the isolation of the real world, which pets the child and accepts the adult, but has not yet set up a proper code of behaviour for the adolescents. This phase of day dreaming is not to be discouraged, for in it are planted the seeds of abstract thinking which may create an inventor, provided the imagination is not allowed to run astray, but directed towards constructive channels.

Perhaps a much greater problem is faced by a boy or a girl whose growth has not been in keeping with others of his own age group. A boy or a girl who has grown faster or taller than other members of his own age group is not only somewhat less active and dull, but is at the time sensitive about this. He feels the isolation more keenly, for he or she is often detested by his or her own age group.

Another embarrassing thing is the fact that at this age heterosexual interests appear. At the early infancy a child has been more or less asexual. The babies of both sexes play somewhat similar games and often they play together. As a child grows up partly due to a difference in motor abilities and partly due to social customs prevailing, the boys and girls are attracted to different types of physical activities. Between seven and say, twelve or even later, due to great change in maturity, it has been almost a fashion for the boy to detest a girl, and for a girl to detest a boy. The narcissistic period of the boys and girls below seven, is changed into a period of group life within the folds of one's own

sex, and this has been described by Freud as the 'Sexual latency period.'

With adolescence an interest in the other sex is awakened, perhaps to prepare the individual for the adult life that lies ahead. This interest is thwarted in many ways. Firstly, the adolescent is conscious of his inadequacies, and of the uncouth appearance of the age. Social inhibitions also come into the way. The society in general looks with suspicion at the free-mixing of boys and girls of this age. These forces act against a display of this interest openly, and the result is repression with its attendant problems.

In some cases, rare crimes of a sexual nature are committed under the urge of this repression. Molestation of single girls on a lonely spot by boys is more common, than the opposite behaviour by the girls, for the simple reason that the boys are not only naturally more aggressive, but because girls feel that the society will not tolerate their indiscretions as fervently as it would for the boys. More often, more perhaps in case of girls than for boys, the repression drives the adolescent into day dreams, where the individual assumes the role of a hero or a heroine, and expects a desired conclusion of his unfulfilled wishes. Greater interest in fiction and films which depict such make-believe stories is perhaps one of the outcomes of this conflict. Many adolescents dream of such partners whom they would never meet in real life. Unfortunately such dreams persist even in adulthood and has been responsible for many a promising marriage turning unhappy.

Education cannot, of course, solve or resolve these conflicts, but perhaps with greater understanding and sympathy we may help the adolescents to adjust themselves to their environment. Teachers can understand the adolescents better, if they realise that the behaviour displayed by the adolescents is the result of physical, social and sexual stresses. When these are understood, a child who seems foolish, or one who appears to be clumsy or vicious may be understood better by a teacher. He will then be able to direct him to such paths as may lead him to a happy life of an efficient citizen.

Adolescence is a period of hero worship. Examples rather than words appeal to the child. If the teacher can live a blameless life, if he is just and honest, if he is fearless, if he is kind and sympathetic, the adolescent will do anything at his bidding. But if an adolescent is a hero-worshipper, he is also discerning. If

the teacher says one thing and behaves in a different way, he will be getting contempt. Let the teacher lead his life in such a way as to be his guide, his philosopher and his friend in the real way.

Summary:

We thus find that growth in a physical sense is not uniform at all ages. It is rapid at first, it slows down to become rapid once again during adolescence. It again slows down in the second phase as to be almost imperceptible during the adult stage. With physical growth comes the growing power of one's adjustment to his environment. A child is conscious of his shortcomings and he envies the more independent ways of the adults. Many of their vexations, many of their make believe plays in early childhood are the results of this urge of growth.

The problem of growth becomes complicated due to the fact that the two sexes grow at different rates. The girls before adolescence grow somewhat faster than the boys and are, therefore, less cared for in their physical needs. They are more independent and are a bit sophisticated especially beyond the age of seven as compared to the boys of their own age group. This produces a sense of contempt on the part of girls for boys and is repaid by a similar contempt of the boys for the girls. Individual differences between boys and boys of the same age, and between boys and girls of the same age are also considerable. A child who is over-grown for his age is less cared for, he is independent though somewhat defiant. A child whose growth is retarded in his early years is so much cared for, that he grows into a helpless and dependent being, and this habit is not corrected later, even when his growth becomes normal.

Problem of growth thus shows possibilities of wise guidance. We must direct our educational schemes along the lines of natural instincts of the children and take into account the sex and individual differences in the process of growth.

Motor activities of children develop according to age. From attempts of reaching an object, the child gradually learns to grapple with his environment. Then his motor activities take the form of a series of make-believe games, like playing the traffic police, making his imaginary train by pushing a chair himself (performing the task of an engine). During these games perhaps he is trying to imitate adult activities and these activities are as much a challenge to the adult world as his earlier efforts had been when he would put on his father's shoes and say 'I am daddy'. Perhaps

these games help him to draw images in a better manner, for he symbolises the essential features of a new experience. Perhaps social customs develop in our children different kinds of activities for boys and girls. While girls like quieter and more domestic games like a doll house, boys prefer games that need more of jumping. Besides social approval for the two kinds of games for two sexes, there is the basic fact that physiological differences in the sexes make girls somewhat sedantary.

Opportunities for motor activities depend to a large extent on the social customs and on the facilities. Well-placed families can afford a variety of leisure time activities for their children and this is not possible in a less fortunate family. It is no wonder, therefore, that children from the slums are turning more aggressive and perhaps showing a tendency for delinquency. Perhaps this can be remedied by a careful planning of children's parks and providing a careful selection of healthy means of relaxation in these parks and in the schools for the children of less favoured communities.

Adolescence is a period of emotional and social crisis. Self-consciousness of one's growth during adolescence drives the individual into a sort of isolation, where he is given to day-dreaming. If wisely guided, this may develop in him abstract imagination, but otherwise it makes him an idle dreamer. Adult world or at least the sympathetic teacher should accept the adolescent and understand his problems and encourage him to adjust himself to his environment. A greater problem faces an individual who grows faster than his age either in height or in weight. He is shunned and ridiculed even by his own age group and this becomes doubly unbearable, because rapid physical growth reduces his intelligence and endurance making him awkward. Hetrosexual interests in adolescents are often repressed as guilty thoughts and this repression creates problems for the individual which is often embarrassing and which needs wise and careful guidance of a teacher whose character and bearing should be above reproach. Hero worship is a feature of adolescents, and the teacher by his character and bearing should become a worthy hero to be worshipped.

CHAPTER IV

DEVELOPMENT OF EMOTIONAL LIFE FROM EARLY INFANCY TO ADULTHOOD

Early Emotional Reaction :

Some psychologists hold that cries and thrashes of limbs of a new born infant, are emotional in nature. But one cannot assert this fact definitely. When, however, an infant learns to smile at the human face it is definitely showing an emotional reaction. Perhaps this early smile will soon change to a hearty laughter at a later age. As a child grows older, he may subdue some of his more violent emotions like anger and dislike. This is partly due to his observing his elders whom he finds to express their feelings in a more subdued manner and whom he imitates. Partly it is due to adult control who resent his violent display of emotions. Perhaps it is also due to the fact that with increasing age the child gets a greater command over his language and learns other forms of expression through symbols and gestures and hence no longer needs violent bodily demonstration as the only means to give vent to his feelings.

Be that as it may, children's display of emotions is more violent and overt than that of an adult. The conditions that provide an outburst of emotion change with growth. An infant's emotion is aroused by such stimuli as affected him directly, and in which he is vitally concerned. As the child grows older, his world gets larger and his interests also change, it is but natural that he becomes impervious to many events that produced more violent emotional response at an earlier period.

During infancy any situation that blocks the natural course of satisfying a child's interests or desire may cause an emotional stress. Perhaps the child wants to accompany the parents in their outing and the parents would not take him out. He starts crying out, as a result of the emotional strain caused by this apparent parental rejection. Perhaps the parents in order to pacify him would give him a doll to play with. In other times such a doll would have been eagerly coveted by the infant, but now it will not do. It has become a poor substitute. He was eager to participate in adult activity that has been denied. The child wrecks his vengeance on the doll which becomes an object of

apparent parental deception and perhaps his vengeance may assume a cruelty which the child is not otherwise to display. This gradually forms into a habit and the child gets cross and peevish, given up to a display of temper tantrums. To avoid this, we must, therefore, understand the child and his needs for the moment. Perhaps we may not be able to satisfy his needs, perhaps the satisfaction is not always desirable. In such cases we must be able to give a substitute which is similar. When the child wants to go out with adults, he is interested in human company. Let him, if he has to be kept back at all, be given the company of others of his age group, or let some one else take him out to another place.

Emotional Reaction from Weaning to Early Schooling :

Weaning is a critical stage for emotional reaction. As the teeth appear, children often develop symptoms of severe malady, and their good habits get changed. Breast feeding has often stopped, for a child hurts his mother by his teeth. To the child, however, the reason of this stoppage is not clear to him. It appears that he is being deprived of a privilege which has been his birth right. Probably at this time a second baby may appear in the family, and it seems to monopolise the mother. If such be the case, it is natural that the child will grow jealous of this new rival, thinking it to be responsible for all the losses it has suffered. This antipathy is often displayed in a violent form, sometimes by hurting the baby. After weaning, while the child is engaged in individual games, he is somewhat narcissistic and self-centered, and he seldom displays a violent temper unless he feels that he has been unduly deprived of some of his due or when he is thwarted in his activities. Sickly and underdeveloped children who are unable to engage themselves in play activities are, however, possessive and emotional, perhaps somewhat peevish and self-centered. They will not want adults pay attention to any one but themselves. Perhaps they display this because they have nothing else to distract them. Perhaps their peevishness is due to ill health. If a child is sent to school rather too early, he finds himself confined there for a large part of the day in a new surrounding. The first few days of school are periods of great tension and anxiety for any child, because one does not know how to get along with other children or with the teacher. The boy feels himself banished from the congenial home surroundings which he knew and of which he had the full assurance developed.

He compares his state with that of his younger brother who is happily resting with the members of his family, while he is being put into a strange place with strangers and with a certain amount of restraint put on him. This makes him feel somewhat jealous and wayward, not unlike the feeling experienced during early weaning. Perhaps he would refuse to go to the school and play the runaway at the time, when he is expected to go. More submissive ones may not dare so much, but still they will display what Shakespeare has written in *As You Like it*, 'Crawling like a snail unwilling to school'. In order to understand this resistance to school, we must take into account his inner conflict and try to resolve it with sympathy and tact. Some of his outward behaviour although apparently illogical, may be found to have logic of their own, if examined in the light of the child's inner urge. Perhaps our understanding of the child will make him happily adjusted with his own age group, a need that is quite imperative for his socialisation in the world at large.

By and by, a child gets adjusted with his elementary school, with his playmates and with his teachers there. But when he is suddenly forced to leave this, which has become a second home for him and forced to enter a secondary school, perhaps a new set of problems may arise, which will bring a new set of emotional troubles and need a fresh adjustment.

Emotional Conflicts in the Secondary School :

Under the present set-up a child enters the secondary stage after five years' schooling, often at the threshold of puberty (adolescence). If the primary and secondary departments are attached to the same institution, the conflict is not very great, for the surroundings are familiar, and he goes along with his old classmates into the secondary department. But if the school is a new one, he may not find many of his older mates. One must also realise that this is a period of adolescence carrying problems of its own. The child feels doubly isolated. He is isolated from the children and adults, as is common with adolescents, and he is isolated with his old friends who might have joined other schools. The social isolation connected with the problems of physical growth makes the child somewhat of a withdrawing type satisfying the emotional conflicts mostly in fantasy and day dream. Breaking of friendship causes emotional stress, and perhaps this may be aggravated for a child whose transfer to a new school is also caused by the transfer of his

parents to a new place, when he is totally cut off from his old friends. Quarrel between two friends sometimes causes severe emotional stresses, and its effect should not be overlooked.

Another cause of emotional stress at this period is the fact that social requirements sometimes force an adolescent to appear in presence of members of the other sex. An adolescent as we have seen is extremely self-conscious, and all adolescents, especially girls, feel extremely embarrassed if they are brought before members of the other sex. This is especially marked at the age of 13 or 14. Whatever may be said in favour of co-educational institutions, and their advantage in socialisation, it is undeniable that unless both the sexes are present in at least equal numbers, the sex that is in a minority suffers peculiar discomfort, and are subjected to severe emotional stresses, especially at this stage rather than in an earlier or a later age. Perhaps an adolescent, though he craves recognition and praise from the members of the other sex, will find a greater security if the teacher belongs to the same sex. The display of 'Calf Love' instinct in some of the girls' schools where a young male teacher is employed is fraught with great emotional and sociological dangers, even when such a teacher bears an exemplary character and the girls are otherwise sober and sophisticated. Occasional embarrassed feelings leaving severe remembrances in the minds of the committers are by no means uncommon. It is, therefore, necessary that in a secondary institution, the proportion of lady teachers and male teachers should be approximately equal, so that the boys may go to an elderly guide for solutions of such problems which they cannot confide to a teacher of an opposite sex. The girls more than the boys should have access to lady teachers, who will look into their personal problems tactfully and sympathetically.

Failure in schools is a common cause of emotional disturbance, for it hurts the newly developed 'ego' (feeling of self-esteem) and makes a child lose his status both at home and in the class. It also frustrates the desire for success. Detention also means staying in the same class, reading the old books with accompanying boredom, and spending in company of those students whom one had so long looked down upon as mere juniors. It further means parting of old friends, his previous classmates. Any one of these factors if taken singly would be enough to cause strain, and the cumulative effect of so many factors is surely likely to create a sense of frustration and loss of interest in the work which is psychologically known as retardation.

Children are subjected to emotional disturbances in the schools in other ways also. Sometimes the moral code followed at home and schools differs, and this causes severe insecurity feeling for a child if not an occasional conflict. Children coming from orthodox and conservative families find the code of conduct followed in a secular and liberal schools rather problematic. Likewise, children from secular and liberal families find it hard to adjust themselves properly in a mission school or a school set up by a particular religious denomination. If such children follow their home codes in the schools, they are likely to be ostracised in schools and so feel themselves isolated. If they try to bring the school codes within their family circles they are rebuked. A similar state of affairs is seen when school is populated by a particular socio-economic group, and a child from another group enters there. The cultural patterns and codes of conduct followed at home and school act at cross roads, and create severe strain for the child. In India such problems are created by the caste system, for caste is both a religious and a socio-economic institution and cultural patterns of different castes display considerable variations. Our secular schools should take note of the possible conflict between the home patterns and school patterns and their likely repercussions and insecurity feelings created in children. Reforms are desirable and such angularities are to be rounded off no doubt, but the process of rounding off must be slow but sure. Any attempt at hastening the issue will make the child a rebel, either at home or at school situations, more often to school situations than home (for home has imprinted its culture patterns early),—a possible calamity which we should not overlook.

In later adolescence, in high school classes, there may be conflicts between the vocational desires of the youth and that of the family. The boy may aspire to become a doctor and has acquired a taste for biological studies, but the parents wishing to make him an engineer force him to study mathematics instead, a subject which the boy dislikes. This causes further dislike and the boy begins to hate his studies altogether. This often results in failure with all its attendant problems, all due to lack of foresight of the parents.

Emotional conflicts may also be caused by a difference between the levels of aspiration and of achievement. A student having much higher ambition than his merit or his abilities, will always have a setback. He hopes to secure a high position

in the class, but is surely disappointed when he finds his answers marked down by the teacher as poor. This may cause severe emotional strain for the boy making his adjustment with the reality rather difficult. To prevent this state of affairs, teachers should do well in changing their standards of encouragement. Perhaps instead of encouraging attainment, they should encourage efforts. A boy whose previous work merited him say 25% marks and later one 45%, should be given better praise than one who improves his work from 65% to 75% or is steady at 70%.

Repeated failures in the class examinations generally cause such frustration that the level of aspiration goes down, and the students lose confidence in their efforts. As a rule, whatever may be said about failures being pillars of success, failures seldom stimulate a student to a higher level of aspiration. Obviously, a major contribution of the school to the proper emotional development of a child will be to adjust the level of aspiration of the children to the basic facts of reality. Depending on their innate intelligence and the personality according to the opportunities available in terms of their socio-economic status, they may find it hard to cross a barrier. This a wise teacher can do by personal counselling but to succeed he must be able to secure confidence and trust which his superior scholarship, exemplary character, high sense of justice, fairness and sympathy can secure.

Frustrating Emotions and Education :

The course of life seldom runs smooth. Very often we feel hurdles and blocks on the paths of our progress. The way in which we react to these blocks determine the emotional setup and the makeup of our personality. Educationally we are concerned with them because by proper adjustment of the situation, we may ~~mitigate the effect of those emotions which have a frustrating effect and which are thus likely to act as hurdles in the development of a child.~~

Anger: As a frustrating emotion anger is perhaps the commonest, and has the earliest beginning from the very infancy. When we feel we are being deprived of our dues on account of somebody's fault, we get angry. It may vary in intensity from the simple resentment or irritation to the outburst of violent rage. When we feel others are getting what is really our due, anger takes the form of jealousy. The visible signs of anger are flush on the face and a rise in the blood pressure. Its intensity increases

when we are tired or hungry. Sometimes instead of being the result of a single thwarting situation, it may be the effect of piling up of a number of irritating situations. Constantly asking foolish questions when a man is busy makes a person get suddenly angry when the last straw breaks the camel's back. Sneers and back-bites of others may produce as much anger in the mind of a child as a severe thrashing. Sometimes anger takes the form of an inward aggression, and an angry child wishes himself to be violently ill or even dead in order to retaliate against his father's thrashing. Perhaps subconsciously the feeling that lies within is to cause inconvenience or hurt the sentiments of the persons who have injured their feelings. Sometimes aggression gets transferred. A child hit by the parents cannot hit him back. But he hits younger brother or a doll, just to give an outlet to his pent up feelings. Perhaps at the back of this also lies the subconscious desire of wounding the feelings of the aggressive parent at least indirectly.

Perhaps the best way to prevent this frustration emotion is to prevent situations that may foster it. If the teacher is impartial and parents are likewise, there will be no occasion for jealousy. In all cases of punishment, the child should realise why he is being punished. His moral self 'super Ego' as Freud will call it, must be at the side of the elder when the punishment is being inflicted. Thrashings as a rule should be rare, if not banished altogether, sneers will not bring a sluggard into work so effectively as a little patting on the back and encouragement for an effort, however, insignificant it may otherwise be.

Fear: Sometimes thwarting of an activity may develop a negative situation, and we get shaky of our very security. Fear may start from mild forebodings or apprehensions, and go right up to the stage of paralysing terror. But in all cases, the feeling of helplessness to meet the situation seems to be the origin of the fear. The visible signs of fear, are trembling (perhaps with accompanying clattering of teeth) of hands and feet, accompanied by perspiration and dry tongue. There is also a loss of appetite. A child who is continuously afraid, feels more and more helpless and ultimately he is unable to accomplish anything. If we trace the origin of fear, we shall, in majority of cases find it in the bogey of fear that is often planted in the minds of children in early infancy. Some people thus get afraid at the sight of harmless insects like the spiders or cockroaches because of the thoughtless action of the elders. Fear like anger may not be the result of a single situation but may be the cumulative effect of a number

of trying situations. A child who is being daily scolded in the school may, for instance, develop a fear for the school itself.

Perhaps, if we teachers are careful, we may cure a child of this emotional complex to a large extent. Many of the fears which have been implanted into the child will then appear to be foolish and the child will learn to get over them, if the teacher works his way up patiently and persistently. Gradually a spirit of confidence may replace the paralysing state of helplessness on the face of frustrating situations, only if the teacher can inspire that confidence. But alas! instead of trying to cure, we often aggravate the situation by providing occasions of frustrations, like failure in examinations, by humiliation and sneers and perhaps rejection. These naturally, leave their lasting marks on the personality of the child and instead of building healthy individuals, we are producing timid and subservient creatures who cannot stand on their legs and are unable to withstand any shock in their lives. Let us remember the words of Tagore:

"Where the mind is without fear and the head is held high",
for on this lies the future hope of a free India.

EMOTIONAL EXHAUSTION:—Frustration may sometimes cause a person to be so completely worn out that he is reacting to a situation in utter helplessness in a different way. He may not be afraid, yet he loses all interest in grappling with the situation. He is too much exhausted or otherwise distracted to concentrate his efforts to solve the difficulties. Such situation may occur within the school room itself. When such children are unable to concentrate, the quality of their work goes down. When this maladjustment is carried to the point of complete exhaustion, we get nervous breakdown or neurasthania. This is a common malady of the adolescents.

Perhaps with a little encouragement given at the right moment and with a little timely help, we may be able to solve the difficulties and avoid such a situation to occur. But when the right time has passed, the malady may become pathological, and nothing but clinical treatment and complete rest with attendant wastage of time, involving perhaps the risk of retardation will cure it.

ESCAPES AND PSEUDO SOLUTIONS:—Perhaps a few individuals may try to avoid danger by pretending that the danger does not exist, or by escaping from it, without showing the courage to face realities. They may be compared with rabbits who simply close their eyes and would not see the approaching danger. Some

run away at the very approach of a danger like so many fawns running away by a mere sound. If a child finds the school unwelcome, he may often play the truant. More often the escape is only in fancy, as in the case of an adolescent who tries to compensate his inadequacy in the real world by day dreaming and creating a world of his imagination. A child who is not vigorous and assertive enough, will find day dreaming almost an obsession, a situation which he cannot help falling into. As a result of frustration, whether at home or at school, he will instead of facing the reality and removing the basic cause of such frustration, try to live in a dreamland of his own fantasies. Such persons, when they grow up will never be able to face realities squarely, unless they are able to cure themselves of this habit.

It is, therefore, necessary that while constructive imagination is to be encouraged, fruitless day dreaming should be cured at all costs. This can only be done by wise guidance. Schools can cure children by providing equally useful and alternative choice in case a particular line of effort is proving fruitless. Children should also be given opportunities to pursue their lines of imagination into useful and constructive channels.

OVER-COMPENSATION:—A few individuals, however, react to a frustrating situation in a different way. Although inwardly conscious of their inadequacy or limitations, they try to show off assuming a carefree and often a bragging attitude. By this aggressive and overbearing display of emotion, an individual is really trying to conceal his inadequacy. This type of emotional maladjustment needs curing, for otherwise it may produce undesirable conflicts within the class room, besides development of the brag's personality on wrong lines. Perhaps, a wise teacher can do much by individual guidance and showing the brag how foolish he had been, and how he can achieve real eminence in more socially approved ways.

Restoring Emotions :

PLEASURE:—A feeling of pleasure restores us from many frustrating situations and motivates us to push our way forward. Satisfaction gained from any activity serves as a tonic helping us to go forward and overcome fresh barriers. Perhaps to produce this effect we are sometimes tempted to offer rewards and prizes. This certainly stimulates the competitive spirit, but it moves the source of joy away from the activity and implants it on an external thing, namely on the reward. Sometimes it may bring

undesirable effects to win the prize by hook or by crook—which becomes the motivating tendency. To be really effective, the source of excitement must be the activity itself. It is the effort that must give the pleasure. This is possible provided the situation offers a challenge to the individual, and successful outcome provides an individual an opportunity to assert his confidence. The task set up must certainly be within the range of the capacity of the person attempting to perform it.

If we as teachers can set up such tasks as are challenging, such tasks whose utility is self evident (they being connected to real life situations) and which are within their capacity to perform, we shall provide them an opportunity to derive the real pleasure from the effort they are to make. This and this alone will make school tasks really worthwhile and pleasant and stimulating.

Humour: Wit is the sauce of life. A gift of humour restores us from many a frustrating situation and keeps our strength intact for a fresh attack. This must necessarily be cultured in the child from the start. It is a false notion that the teacher is likely to lose respect if he displays humour. He should not of course be funny and clownish, but a sense of humour displaced at the right place in a right and dignified way will enhance the respect of the boys and at the sametime afford the children an opportunity to use a sheild with which to ward off many approaching difficulties.

Affection & Sympathy: Perhaps of all the restoring emotions that which child heeds most in a teacher is affection. The child comes into the school with a certain amount of frustration. He has been snatched away from his home and put in the midst of strange surroundings. He needs a sympathetic teacher to rehabilitate him there, providing him the security of a second home. Perhaps his home conditions may be unhappy, he may have a tyrannical father, or a stepmother who shows him no affection. Perhaps the constant quarrels at home may make him feel insecure there. It is the sympathy and affection of the teacher that will provide him the necessary refuge which his home has denied, and will help him to develop his personality in the right way. Perhaps his classmates are not just to him, instead of looking to his physical disabilities and awkwardness in a kindly and tolerant way, they take pleasure in ridiculing him. This makes the school a hell for him, tempting him to play a truant. It is the sympathy and affection of the teacher that will help him to bear these out.

It is the want of affection that makes an unwanted or ugly

child rather wayward. It is again the lack of sympathy inside broken homes which make a child delinquent. If children reared in a hostel or in an orphanage are sometimes hardhearted, and self-centred, the fault lies in the fact that they have missed this vital tonic in their upbringing. Of course just as a mild drizzle rather than a heavy downpour is more conducive to the growth of crops, in the same way a child should not be flooded with a show of affection.

Affection of teachers and parents, if wisely bestowed will be helpful for the normal development of the children, and such children will, in the long run, be more amenable to discipline than others who are always harshly treated:

'It is better far to rule by love than fear'.

Summary:

Emotions are motive forces that drive an individual to action. Such drives are sometimes useful and may be explored by the teacher for better and happier ends, or they may be harmful producing undesirable effects which we should avoid. But before we are able to decide what is good and helpful, and what is harmful and undesirable, let us study the emotions.

The normal situation of life itself produces certain emotions that we should take note of. Emotional outbursts start in early infancy, and are more overt and apparent. But these get subdued as the child acquires greater control over his environment and acquires greater power to deal with his environment. The next outburst of emotion comes at the weaning period, when the child feels he is being deprived of some thing which he ought to have. It is wise parental direction that can cure this. But many parents overlook this, and so children sometimes start life without being properly weaned. Perhaps as the infant gets interested in individual games, this emotional maladjustment gets hidden for the time being and this further deceives the parent who feels that the child has been cured. The situation of early school is not much different from that of weaning and very often the same emotional disorders are apparent. As the child adjusts himself in his primary school environment, he is again temporarily restored but maladjustment recurs when he enters the secondary stage. Often this change takes place when the child is just nearing his adolescence, and emotional disturbances of the adolescence get mixed up with the disturbances of rehabilitation into strange surroundings. The youth is either truant or

dreaming. The competitive spirit of the secondary school, with the attendant risks of failure and detention produces many unhealthy causes for emotional maladjustment.

As the child comes into a secondary school with a certain emotional setup and as the conditions of the secondary school itself over which an individual teacher has no control aggravate the situation, it is necessary for a teacher to find out what are the chief frustrating emotions which are destructive and what are the restoring and constructive emotions. The former shatters and the latter builds up a health personality. Within the limited means available to the teacher to build a child's personality emotionally, he can at least avoid or mitigate the frustrating emotions developed. It is only by this that a wise teacher is able to build the healthy personality of the children under his care.

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EXERCISES (Chapters III & IV)

1. What changes in course of physical development do you notice in adolescence?
2. Draw up an educational programme with reference to the physical needs of the children.
3. What do you understand by problem children? To what extent is the conduct of such children the outcome of unwise guidance on the part of parents and teachers?
4. Discuss the part played by emotions in the development of the individual. How would you educate the emotions of the child?
5. How does mental conflicts arise? Describe the usual reactions to it.
6. What do you understand by emotional health? How can this be secured?
7. Show in what ways the psychology of adolescence would affect your scheme for character development.
8. "School is set to cure what the family has spoilt by unwise handling, training and emotional adjustment which a teacher can work."

CHAPTER V

DEVELOPMENT OF SOCIAL CONSCIOUSNESS

Social Consciousness of Early Childhood:

The development of a child's personality as an individual depends to a large extent on his development as a social being. An individual does not exist in isolation. His individuality becomes all the more vivid when it is made to stand against a social background, when he is compared with other individuals of his group. Alexander Selkirk or Robinson Crusoe can neither be called truthful nor virtuous, when cast away in a lonely island, for when there was no other man there was no occasion to speak either truth or a lie, nor was there any question of honesty or dishonesty. It is society that determines the status of an individual and determines values, morale or otherwise. As the child progresses, his ability to participate with others in society also increases. He is thus able to adjust himself with his environment, both physical and social. The more he does so, the more does his personality, his singularity among the group become developed, and thus it can be truly said that it is the social surrounding that helps in the development of one's personality as an unique individual.

Perhaps at the very birth, an infant has no social consciousness. He, however, finds his needs being fulfilled by a living agency namely his mother; on her depends his very existence. This is perhaps the most fundamental form of a social relation, that which consists of two beings, the mother and the child. Gradually the child learns to distinguish not only his mother but other people as being different from lifeless objects. During the first few months, the social approach that an infant makes towards other individuals is by smiling and by imitating their sounds or their gestures. Smile thus represents not only a pleasure emotion, it has a social component as well. It is meant to communicate and convey to others that the child feels pleasure. But this time he has a different approach to different persons. To some he simply smiles, to others he pushes forward his little hand as if to be taken in their arms. By the time a child is six months old, he begins to take notice of other children, perhaps their smaller stature than other adults, perhaps their peculiarity of voice more

resembling his own than that of adults gives him an assurance that they are more akin to him than other big people. It is, however, seen that the early interests are of mere curiosity. The real interest in other children takes sometime to develop, and perhaps it may not be till he is about eighteen months old that a child would develop a sufficient interest in other children as would make him consent to play with them. For some children, this may be delayed until a child is about two years old. Even in such cases such plays are confined to only brief periods, the majority of an infant's play being confined to individual activities. This goes on upto the age of four and a half to five years as far as play activities are concerned. Most of the children's time being taken up in individual games and joint plays with other children are more or less interludes. We may, therefore, say that until he is five years old, a child's play activities show that he is in the society but not of the society.

Whatever may be his attitude concerning the play, the child is not otherwise indifferent to the larger society. He is suffering from two pulls, it appears. He is interested in his age group, but at the same time he looks up to the adult world to admire and pay attention to him. He looks to the adult society for approval of his actions, his childish pranks, and he hesitates to commit any act in which he is likely to be disapproved or rebuked. His imitation, it has been asserted by educationists like John Dewey, is also an instance of his socialisation. The very act of imitating an adult action, shows the child as an instance of engaging himself in a socialised activity of partnership. Even while a child is playing an individual game, he is conscious of his surroundings, he does not fail to notice how others are watching him. His interest increases when he meets with the approval of others in his individual games.

It may appear that when a child is playing as the traffic policeman is using a chair, as a carriage of a train, he is essentially an individual getting the joy all by himself through the activity. But probing deeper, we find that he is at the same time seeking a recognition from others and is stimulated when he finds others approving of his actions. Even when he steps into the shoes of his father and is lisping "I am Daddy", he displays a craving for the superior social position which he finds his father is enjoying. In many of his make-believe games, he aspires to be an adult because he is so painfully conscious of his relatively inferior social position.

In all these we find the child is definitely deriving values of social superiority and inferiority from the surrounding social situation.

The stimulating force that drives the children to progress in performance of all sorts, whether in play or in the acquisition of language or in imbibing of manners, is the increased awareness of the standards set up by the adults. If a certain amount of sex difference is noticed in their behaviour even at a very early age (for instance boys quarrel more and girls weep more), it is also due to the fact that the society has set up different standards for the boys and the girls. Aggressive attitudes in the girls are disfavoured by the society even from a very early age. It is no wonder, therefore, that the girls become comparatively more thoughtful than the boys even at that early age.

Social Consciousness in School or Play Group :

Perhaps a new change comes when a boy or a girl enters a school, be it Kindergarten or Primary. For those whose schooling is denied or delayed, the change is noticed a bit later, but is nevertheless manifested in play grounds, of their street corners or neighbourhood.

It is in the school or in play group that the child finds an ideal position to assert his personality. In the family, the atmosphere is hierarchical, the child is surrounded by his superiors. Their direction at an early age was perhaps necessary to gain an essential control of his environment and for him to acquire some working standard for his values. Having done so, he has acquired a certain amount of independence. In the play group or in his school the child is among his peers, all approximating his age and his attainments. This is thus the ideal place for him to assert his individuality. For group games, there must be a leader or an organiser. But at this early stage, the leadership is not clearly defined. Perhaps the more resourceful child would lead a certain activity, but he will very soon find that his leadership is challenged by others. Constant making and breaking of friendship is the rule rather than an exception at this stage. Even at this stage, we should not feel that a child is "egoistic", he is not unmindful of the social values. If the leadership is often challenged the reason is not so much that the child has not learnt the values of organised activities. It is because the leadership carries with it a social prestige, and each child covets that aggressively, so he is unwilling to obey the dictates of another. The consciousness of the superior value of teamwork under a constant leader, takes time to develop.

Perhaps the type of activities that children are engaged in at this age are somewhat simpler and do not need a sustained organisation under a constant leadership.

By and by, children learn that success is possible in games and in many other activities only through organised teamwork where the direction and leadership must remain constant and unvarying. The loosely formed group now turns into definite cliques or gangs. In this situation the most resourceful boy assumes the leadership.

While this is the situation in play and in other voluntary activities, in formal school activities however a sort of hierarchy not very different from that found at home is found. Here the teacher is definitely the accepted leader. His adult position, his supposed vast knowledge and his similarity in some respects and perhaps his difference in other respects from the parents at home confers on the primary school teacher a position of authority which perhaps no teacher at the later age, in the secondary or in the university can hope to attain. A smile or a word of praise from the teacher makes a child's life bearable in the school, while a sarcastic remark will make the school, at least its formal activities a veritable hell for the poor creature.

With growing age, children acquire a competitive spirit and a desire to "show off", but this tendency is also a social one, for it is only when some are running a race that one can feel himself to be ahead. The very showing off means that there are others in whose contrast an individual becomes more prominent.

To a great extent the child's behaviour with his group is determined by his family upbringing. If a child has had too much attention bestowed on him, he will naturally be over-dependent, and may lack emotional control. He will then avoid aggressive games also. Such children will naturally find themselves ill-adjusted in the group games and will gradually become more sedentary. They will perhaps cling more to adult groups from which they expect to gain support and protection rather than from their own age group. If a child comes from a home where parents, especially mothers, are irresponsible, the child will compensate the parental neglect by unduly showing off in his age group. This will perhaps make him less popular in the long run and the child ultimately becomes a lone fellow bragging his own trumpet. Children coming from such homes where parents constantly quarrel, may become very aggressive. Such children either become gang leaders or are shunned by their playmates for being over assertive. It is only when children

come from such homes where understanding and co-operation of the adults is blended with industry and wise guidance, then we find them co-operative, who come to the school with the spirit of 'give and take'.

Besides the barriers created by unwise upbringing of the child, we must consider the barriers created by a difference in socio-economic status. Children of rich parents are sometimes prevented from mixing freely with children of lower group. This not only makes socialisation incomplete, but in some cases produces a parent-child conflict. In some cases with more docile children, it may produce harmful class-consciousness from a very early age which is so harmful for effective socialisation in a classless society that we are aiming at. Religious, provincial and caste differences in our country have created similar barriers. Children of one religious faith are prevented from mixing with children of another faith with the result that effective understanding between different religious groups in a secular State like ours becomes difficult. Provincialisation and intercaste hatred are also present, mainly because from very early age we are prevented from mixing with children of other provinces or of other castes. Thus verily in the words of Tagore, "We adults are responsible for the little free world of children being divided into narrow domestic walls".

Perhaps a wise teacher can do a lot in removing this state of affairs. He is able to persuade the parents to be more reasonable in their attitude. But perhaps in this he may not always succeed. But besides this, without giving much offence to parental susceptibilities, he may provide opportunities for effective socialisation through educational trips, through group games and through co-operative teamwork. In such activities "the cook's son and the Duke's son" (rich and the poor) may come together. Caste or religious differences may not form insurmountable barriers. Perhaps partaking of meals together, may be avoided at an early stage to prevent strong parental opposition, but short of this there will still be numerous opportunities of socialisation between different castes or religions. It is only through the wise guidance of a tactful primary teacher that we may expect to sow the seeds of a casteless and classless Indian community feeling which is at present a dream yet to be realised.

Social Consciousness of the Adolescents :

With the approach of adolescence, we have seen, there is a

tendency for a boy or a girl to confine himself inside selfmade barriers. This is again a result of a social situation. The adolescent is extremely self-conscious and it is his or her idea of appearing rather inadequate in society that makes him shun the group and recoil into a self-made shell as an oyster does when it sees an approaching danger. The instinct of assertion or Ego which was so long turned outwards in making contacts with others now appears to turn within at early adolescence. Especially the children of lower socio-economic group are hesitant to mix more freely with children of more well-to-do families. At an earlier age the obstruction of free socialisation between the rich and the poor came from the parents of the more well-to-do, group. Now the resistance comes from the children of the less well-to-do families, it is because they are painfully conscious of their difference in dress and other amenities. The resistance is due to the inferiority feeling that develops among the children who come from families which are less favoured in social amenities. It is also seen that at this age the children from the lower socio-economic groups have different attitudes towards socially disapproved behaviours. They are less tolerant and liberal, more punitive and authoritative than the children of more favoured families. This further limits the opportunities of free socialisation.

The growth of interest towards the other sex as has been stated already is more marked at this age, and this is certainly a social attitude. But this has its problems. In a country like India where society considers such interests as "wicked", an adolescent is forced to repress these desires of free mixing. The boy would perhaps try to resolve this conflict with a tendency of showing himself off in the sport field or in mixed gathering or perhaps by wearing a gaudy dress. Some times along with this he will outwardly show a spirit of contempt for the girls, a feeling which may not be sincere. He finds pleasure in teaching younger girls or his little sister at home, which are signs of the conflict he is passing through.

The girls on the other hand, seem to be ever on their guard, over anxious not to appear wicked and socially disapproved. They seem to be suspicious and take offence even at an innocent effort on the part of boys to talk with them. They, however, display their interest in showing off. We find in this age particularly an added interest in their dress and ornaments which are manifestations of this interest of showing off, especially to hide

the ugliness of physical developments that are attendant at this age. Thus we see that in the behaviour patterns of the adolescents of either sex, there lie two social desires, one of showing off before others or at least not to appear too ugly, (which is certainly a social desire) the other is to conform to the adult standards of not becoming wicked, which is again social and which tends them to repress inner urges.

We must also distinguish between individual and the group situations. Individually when a boy has a chance to talk to a girl whom he had not seen before, he may be shy and feel rather awkward. This is the result of three forces acting on him. He wants to show himself at his very best, as a well-behaved and chivalrous person. At the same time there is the painful consciousness that somehow he is doing the job rather badly. There is yet a third feeling coming into his mind of the standard set up of the society that perhaps to be too free in talk will be wicked. The net result of all these forces would make the boy some what sleepish and timid, if not much embarrassed.

In groups, however such boys will appear somewhat bolder and perhaps unduly aggressive. This tendency of forming groups appear more in later adolescence. Here his immediate society is the group, before which he must show himself off. The group at this age is nothing but a crowd in which every individual is filled with a notion of an exaggerated sense of self importance. Every one wants to outgo others and as a result such behaviours are manifested which no member of the group will not dare to do, if he had been an individual.

This group formation is, as has been stated above, a peculiar feature of later adolescence. For a time overwhelmed with emotional struggle and physical problems associated with his growth, an adolescent was forced to recoil into his self-made shell. Later in adolescence he seems to come back as if to challenge the adult world and seeks the place he has lost. The process seldom appears as an individual effort. There is usually a boredom felt for the old surroundings, home and the school, and a tendency to seek one's place in the wider world. A gang spirit appears at this age. This gang spirit is more in the form of crowd mentality rather than organised group life. Like all other crowds, crowds of later adolescence often behave in a thoughtless manner. Perhaps at the root of this crowd mentality lies a vague recapitulation of the social organisation of the primitive

times when youth used to band together just on the threshold of breaking family ties, and this helped them to set up homes of their own. Perhaps the peculiar truancy spirit that is manifested at this time has its origin in the same thing. Friendships at this age are lasting and are based on either of the three things, similarity of interests, similarity of abilities or similarity of socio-economic status.

Educationally, this is a period that needs a very tactful handling. In the earlier part of the adolescence the tendency has been one of withdrawal, or of day dreaming. The effort of the teacher would be concentrated in creating a spirit of self-confidence. Imagination has to be directed into constructive channels, and this can be done by encouraging adolescent to do some creative work, art or music, literary or scientific. Since an adolescent at this age is shy, the teacher has to give him confidence and give opportunities for socialisation, so that he is rehabilitated in his group life. In doing so perhaps the teacher would hasten him into the period of later adolescents, when crowd formation becomes the natural instinct. No matter whether the period is hastened or not, the problem of later adolescence is not one of isolation, but of aggression; and this aggressive attitude is manifested more often in group reaction. The occasion now demands the greatest amount of tact on the part of the teacher. He must know the essential temper of the crowd, where every individual has an exaggerated idea of self importance and where each wants to outshine the others. All these are manifestations of the self feeling or 'Ego' of the individuals. And it is the teachers' job to direct this newly awakened 'Ego' into constructive channels, in a socially approved after avoiding all chances of conflict.

Perhaps he may do this by organising social service camps or through scout movement and other similar activities. Luckily the adolescent is ready to do something good and beneficial to others, provided he is taken into confidence and has a say in deciding what is good and what is not good. Girls may be given an opportunity for nursing and other similar acts of social service. There is an abundant amount of untapped energy in later adolescence. The community as a whole has made very little use of it. Misdirected, it may tend to cause clashes and conflicts, but if properly directed, it will not only give the individual adolescent a satisfaction of worthy employment, but will benefit the society at large. It is up to the teachers and

leaders of the youth movement to devise ways and means to make the best use of this energy.

Individual Differences in Social Response :

While the changes referred to are general social behaviour one must also remember that individuals may behave somewhat differently from what is expected according to their age or social status. These differences manifest themselves quite early in life.

Even from early infancy, it is found that some children are more social and responsive, while others are shy. This difference is caused by a difference in their upbringing although both are being reared in the same family. Perhaps early in the infancy, while one of the children was showing a bit of unusual interest in other people, his parents or other elders encouraged this behaviour of his with a visible sign of approval. This has naturally made him more sociable and responsive, and he will carry this initial advantage throughout his life. It is equally possible that in case of the other child, attempts of being sociable has been discouraged by rebuke or any type of obstruction. This makes him shy for ever. The fact that the same family often contains an aggressive and another recessive (withdrawing) child would prove that the difference is not so much due to heredity as due to early conditioning.

When a child enters the school, he brings with him the peculiar personal behaviour. He is either sociable or shy, either aggressive or recessive. Some change of behaviour, no doubt, occurs in the school but on the whole, children show a high degree of consistency in their predominant character. They mostly remain aggressive or recessive, sociable or shy as they had been before. Within the school we find four different types of students with four predominant traits:

1. The first type has the predominant character or withdrawal. The individual would always shirk away from an embarrassing situation and would thus belong to the recessive type.
2. The second type would be aggressive who would strike at the environment and fight with it. Such children are pugnacious (ready to fight) and otherwise highly strung, getting unduly excited at little things. Perhaps lack of proper guidance at weaning period may have resulted in this behaviour, but they bring this type of behaviour into the school and display them in all social situations.

3. The third type may be called the conforming type who are able to adapt themselves to changes and are otherwise very social. It is this type, it may be called, that has been brought up wisely.
4. The fourth type consists of the cautious who literally measure their steps as they proceed. In social relations they display a shyness which apparently does not seem to be very different from the withdrawing type. While the withdrawing type would always remain aloof from any situation, the cautious type, when once the shyness is broken, may display an enthusiasm in familiar situations which is absent in the withdrawing type.

Perhaps no child can be said to belong to a pure single type, one type may predominate but there may be hidden traces of one or more of other types within the individual. When we notice that a child changes his behaviour pattern, we may conclude that what really happens is that the predominating behaviour shifts into background and a secondary type hitherto hidden or latent comes in the forefront to take its place. This shifting may take place of course by mere accident, but certainly the wise guidance of an experienced teacher is able to detect traces of the secondary behaviour pattern in the individual. When the individual is either withdrawing or aggressive under normal situation, he may either have traces of the cautious type mixed with the former or of the conforming type mixed with the latter. A little encouragement or reassurance will break the barriers of withdrawal and perhaps cure him of the effects of over-cautiousness. Instead of an individual who has been non-cooperative, we shall find him co-operative enough under certain situations. Similarly an aggressive individual with traces of cooperative and conforming spirit in him, may be provided with such situations where his aggression becomes a source of perseverance and he may be encouraged to perform tasks which challenge his powers rather than remain irritable and pugnacious.

Thus though these traits are implanted in the infancy, and it is impossible to uproot them, yet it is still open for us to guide the individual in such a way as to reduce the unsocial aspect considerable and to encourage a mere social type of behaviour.

Summary:

The social consciousness of the child is present from a very early age. The urge of individuality has at its background a

social consciousness for it is the social surrounding that gives values to an individual. The social consciousness gradually develops from the simple mother and child relation to an interest in other adults and then to an interest in one's own age group. Infants display this social instinct in two ways. They show it in plays, where they may work in groups though the duration of such group activities increases with age. But besides the individual activities in which an infant is engaged for a longer time, he is constantly on the lookout for adult approval and this is certainly a social tendency. The efforts of the children at a very early age are directed to the standards that are set up by adults. We thus find a social urge from a very early age.

The social consciousness of the children increase in the childhood when they spend more time with their own age group either at school or in their play groups. Children entering the school experience this change somewhat earlier than others. In the earlier stage of this change, perhaps the leadership is not fixed and friendships and alliances suffer a lot of make and break. This is because the personality and ego (self-feeling) of the children are asserting themselves in the midst of the social situations and the rival assertive tendencies clash. Gradually however, the groups form definite gangs with leadership well defined. While this change is taking place in playgrounds in voluntary activities, and in the formal schooling period, the child acknowledges the leadership of the teacher and the teacher is able to make use of this authority in shaping the personality of the child in the proper way. Perhaps if he breaks the isolation, and joins in the play group and in the voluntary activities also, without asserting and identifying himself in an overbearing manner, he may without retarding the normal development of the child's personality, succeed in directing it wisely and avoid many undesirable clashes of personality among the children.

With the approach of adolescence the child is recessive, he withdraws himself into a self-made shell so to speak. This may display an apparent antisocial tendency, but at the root of this lies the social urge of appearing at one's best before others and the anxiety of the realities in not being able to do so. Perhaps the new taste for boys and girls at this age is also born out of this inadequacy feeling and adolescents are trying to hide their physical inadequacy behind a good and attractive dress. At this stage the teacher's job will be to overcome this shyness and

arrange opportunities for free socialisation and group activities and to direct the day dreaming.

During later adolescence, the gangspirit reappears in the formation of a mob spirit or crowd feelings and with an aggressive challenge against adult standards of judgement. The teacher's job at this stage would be to divert the fund of energy into specially approved and constructive channels of social service. By this method he will not only divert and adjust the adolescent into healthy lines, but will avoid many disciplinary problems which trouble us and at the same time do some thing good to the society.

While these are the general traits there are also individual differences. Differences found in different members of the same family show that these traits are not hereditary but are results of early upbringing. Certain families also show certain common as well as uncommon features. Broadly speaking, children may be said to belong to four types, withdrawing, aggressive, conforming and cautious. While these traits may be hard to cure, it is fortunately found that behind a predominating trait is hidden a second trait. If the predominating trait is antisocial, a teacher can do much to cure it by so arranging the situation that instead of the predominating trait, a mere satisfactory secondary trait is brought forward into foreground and the predominating but anti-social trait it made to recede into background.

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EXERCISES

1. What do you understand by a socially maladjusted child? Discuss in detail some ameliorative measures that you would adopt in treating such maladjustment.

2. How does social behaviour of children affect the development of their personality? How will you best promote the social tendency in children below the adolescent stage?
3. For what reasons is adolescence described a problem age? How would you help with the adolescent's desire for independence?
4. Sketch briefly the social development of adolescence and consider some of the problems of adjustment in adolescence.
5. Analyse the main features of social development of children in school years of pre-adolescence.
6. How do individuals differ in their social reactions? Trace the origin of those behaviours and their educational treatment.

CHAPTER VI

MENTAL DEVELOPMENT AND DEVELOPMENT OF MORAL AND AESTHETIC STANDARDS

Mental development of early and late infancy :

Early childhood is a period of a great struggle with one's own environment. A newly born infant is concerned only with his own surroundings. All his experiences are transient and concrete. He is concerned with his present moment only. Neither, the past nor the future has any force impelling his actions. This feature must be borne in mind when attempting to learn the course of mental development of a child. From a very early age an infant tries to get acquainted with his environment. This is seen in his efforts to look at the light or in thrusting his little hands to hold an object. Perhaps at an early age a child does not distinguish between a flat object with no depth and a solid body having the same outline. A round ball and a flat thing both appear similar to him. Perhaps in attempting to grapple with it, he finds that while certain parts of the ball are nearer, other seem to be deep behind. This slowly gets ingrained into a sort of muscular image, (if at all we may call it an image) or perhaps muscular conditioning and the child slowly learns to distinguish between the difference of light and shade which give us an idea of the depth of an object without even touching it. The process is naturally slow, and a child takes a very long time to learn this simple fact. Perhaps we can trace this slowness also to the fact that past images leave a very weak influence on the infant who lives in the present.

We have already noticed in the previous chapter that an infant is socially conscious. The most important individual in the life of infant is of course his mother. He would need her often, and would want her company to fulfil his personal as well as social need. At a very early age he may call his mother by crying, but later he does it by babbling a definite call for her. Perhaps different types of children would have different types of call but the mother by dinning into his years the accepted call of the language make the child learn the definite call which signifies the mother. Such a call must be easy enough of the child to utter it and he has not yet learnt how to use his tongue properly to utter a sound. Naturally, the sound must be manipulated through the lips only. It is no accident, therefore, that endearing calls for the mother

in all languages, Indian or Burmese, Chinese or European consist of simple vowel sounds or of such liquid consonants like 'M' which does not require anything but the lips to utter. In the like manner the call of near relatives also consists of simple sounds. In India where the joint family system holds true, the call to all near relatives father, elder brother, sisters, uncles or aunts consists of simple sounds, generally a repetition of one sound or of two. In English society the joint family system does not exist. Perhaps the child makes acquaintance with his relations other than father, brothers, and sisters when he is old enough to utter complex sounds.

Perhaps we do not realise how hard an infant has to struggle to adjust itself in a new world. Our own recollections of early life do not take us beyond the age of four or perhaps three. The reason why we do not recollect earlier events are many:

1. In the first place, it is with age that we get the benefit of the changes connected with the maturation of nervous system which according to some psychologists is connected with memory.
2. In the second place, with the development of an increased ability we are able to formulate our past experiences in terms of language symbols and this process of language development takes some time.
3. In the third place, we have probably formed better images of our later activities by practice. By means of make-believe games whether playing the policeman or railway engine, or playing with a doll house, an infant of three or four is actually practising or repeating his experiences in a symbolic way, and this process undoubtedly helps him or her to form better images and to retain it.
4. In the fourth place, it is with acquaintance only that an environment takes a definite shape. We are apt to forget the face of a person whom we have met only once. It is with repeated meetings that his peculiarities are impressed in the mind. With a new born infant the entire environment is new and he is not able to catch up the whole things all at once much less to remember it. The increased familiarity comes with gradual acquaintance of the child.

When we try to remember our earliest recollections, we shall probably find them not as connected wholes or a continuous episode but isolated experiences. Particular experiences are remembered rather than all. Perhaps it is either because some

of them made striking impressions at that time or had been associated with some important goals.

- Be that as it may, in studying the behaviour of infants we find certain things. How he struggles with his environment to gain his experience, how language develops his language in association with his experience of concrete objects will be perhaps the two most striking things to observe. We shall also find that each concrete object that a child uses frequently, gradually gets its proper name. Mental development of later infancy is clearly associated with the manipulation of symbols. Language is the most important and most comprehensive collection of these symbols. Generally speaking, bright children tend to be more precautions than dull and average ones, and pick up the language symbols quite early. They not only learn to speak early, but also do so more fluently. Even among children of similar intellectual promise, it is seen, that there may be a difference of two or even three months in the beginning of speech ability. When the child begins to speak, he at first uses short sentences and answers most questions with a simple 'yes' or 'no'. Those questions which can not be answered by 'yes' or 'no', he uses short sentences of two or three words only. D. McCarry has shown that at an age of 18 months an average child uses a total of twelve words to answer ten questions, showing a large number of single word response (the writers personal experience, though not with a very large number of Bengali children is that at the age of 18 months Indian child of a middle class family, uses some thing like sixteen words for twelve questions). D. Mc. Carry has shown that when a child is two years old, he will use as many as eighteen words and when four years old, he will use as many as forty four words to answer ten questions. This evidently shows that with increasing age, the child's vocabulary or the stock of words increases, and, therefore, he is able to give longer answers. The command over the language depends not merely on development or maturity. It is decidedly influenced by environmental factors. A child who gets more opportunities to associate with older children or with educated adults, is likely to have an advantage over one who is forced to associate either with his own age group or with younger children. The child's environment will likewise have a notable effect upon his learning, correct pronunciation and good uses. We find children living in slums using filthy languages and this probably is one of the reasons why children of higher socio-economic groups are not allowed to mix with them. But this type of language they have

developed from their own environment where they find adults using such languages and they cannot help imbibing them.

Language is however, not the only symbol a child uses to get greater control over his environment. His articles of toy are also helpful. Most of his toys are symbolic and they become even more so when a child puts the same toy to two or more for different uses. Toys like policeman are simple, though their symbolic nature is apparent. But when a child uses a chair for a railway carriage and makes himself the engine, he is improvising his own symbols. Perhaps in playing with these toys, he is enlarging his acquaintance with the original things, and is learning more and more about them. The meaning and significance of these things thus gets ingrained in him, and his mental development is taking place consequently.

Development of the Concept and Reasoning in Childhood :

If we consider childhood to begin from the school going age of five or six (the normal age when an Indian child begins his study) and ending with adolescence at eleven or twelve (the normal age when bodily changes begin to be manifested in a tropical country like India) we find a continuous change in the mental sphere brought partly by the maturation and partly by schooling. The command over the language that has been gained at an earlier stage, before schooling has been merely oral. Now, the child learns a new type of symbol, the written script. During infancy the names stood for the things, now a combination of letters, just symbols, stand both for the name and the thing. Very often, the language used in the books differs from that spoken at home, and the child finds it difficult to learn a new set of vocabulary and language usage. Perhaps in bilingual states, the difficulty is greater, for a child has to learn not only two sets of vocabulary and usage, but also two different scripts. In the language which happens to be his mother tongue, he has at least the facility of using and hearing it at home and conversation reinforces, it being so foreign. The necessity for learning two languages retards the child's progress in either, or some times in both for a time.

It is at this stage that the fundamentals of reasoning power are developed, though in a rather rudimentary form, more as end values. It is claimed by some including Piaget that before the age of seven or eight, a child does not get the power to reason. But, reasoning power of a child should not be confused with a

specific power. One of the mechanisms of adjustment is using techniques that has been made familiar in an situation. Even adults make the same type of mistakes and display the same kind of inconsistency as the children do. It is also seen that in very simple situations, even a young child of five can see through the relations of cause and effect. Thus we should not be surprised at the mention of a reasoning ability in such an early age.

While this reasoning ability displays itself fairly well in simple situations, one must acknowledge its limitations. Abstract imagery is not yet developed. It is not surprising, therefore, if the ability to grasp historical or geographical concepts need some maturation. The reason for this is that until a child is about nine or ten years old, he does not develop time sequence in a historical sense. He still lives in an eternal present in an earlier age. While, a biographical approach may be satisfactory, historical time sequence if taught at an earlier age, may be somewhat unpsychological. The same is perhaps true for geography, being more preoccupied with his direct and personal environment, his every day social sphere. The child has not yet developed a background to understand larger and more remote social issues involved with the study of lands which merely exists on the map for him. Limited abstract reasoning also delays his grasping abstract mathematical processes and one of the great mistakes committed in our country is perhaps that we begin our arithmetical operations rather too early, and that we teach it from abstract to concrete, from the mathematical operations of absolute numbers to the same operations repeated with concrete quantities of money and weight.

There is, however, some difference noticed among children of the town and those from the villages. The former because of more varied environment and of the greater opportunities for mixing with people of different groups if not of nations can grasp the issues better than an average villager.

Much also depends on the secondary means of communication, such as conversation, pictures or reading material. These may help to produce a liking or dislike for the school subjects or for some aspects of a subject rather than another. Greater is the prejudice, the less will be the learning. A child's dislike for Aurangzeb for his wicked act of imprisoning his father, for instance, will prevent a child to grasp the fundamental defect that lay in the method of Mogul succession where quarrels have been a rule rather than an exception. Apart from the effect of learn-

ing, we must be on guard against the imbibing of prejudices, often racial, which may sometimes colour their visions and block their spirit of free enquiry. This is especially true when the children are getting facts communicated by adults. The adults in giving these facts should be more careful and perhaps more tolerant. Otherwise, it may affect the process of free socialisation among diverse communities so necessary for a secular state like ours.

Adolescence Period :

Day dreaming, though more common during adolescence is not to be considered a monopoly of that period. Adults and children are sometimes found to indulge in them though more rarely. The adolescent's day dreaming whose cause is the problem of physical growth and social adjustment has nevertheless a very important function in our learning. It gives the adolescents power for abstract thinking and this builds up a capacity for imagination. This may later be used for developing his creative powers, for at the base of every creation lies the power of constructive imagination. Imagination in a psychological sense is constructive thinking through which an abstract idea takes a concrete shape. Perhaps the day dreams of the adolescent are more crude and are mere wishful thoughts and would require much redirection and wise guidance, if adults help the adolescents. Instead of pushing them towards a corner, where wishful thought becomes a source of consolation and the only way of passing their dreams, they may be drifted into creative and constructive channels. An adolescent has just the potentiality to acquire the power of constructive imagination which may make him a poet, a painter, an architect or a scientific inventor. Left to neglect, the potentiality may either dry up on the face of hard realities of the world or else make the person ill adjusted throughout life. This makes him fly away from the real world on the face of any struggle with the reality, and recoil into a castle of wishful thought even in the adult stage.

Development of Moral standards :

A child's first idea of right or wrong is determined largely by the verdict of parents, and perhaps of other adults of his family. To a small child, the parents are the ideal persons, and the child follows them almost blindly. Had the child remained always within his family confines, perhaps there would be no

moral conflict. He would follow the moral codes of his family members.

The trouble arises as soon as the child is allowed to mix with others outside his family. Perhaps the neighbours follow a different moral code. Very often the children with whom he plays in the street corner or his class fellows in the school have a code different from the one followed by the child at home. Within the racial group there are marked subgroups and each subgroup has its own moral code. Socio-economic distinctions create moral codes somewhat different for different groups. When different subgroups bring conflicting standards, the child often gets bewildered. Thus it appears that socialisation has not only its limitations, but also its attendant dangers. The child feels the pull of his early upbringing, but at the same time sometimes feels the justification for the code of the other group.

Other forces are also at work. An athlete or a movie actor or a crook may catch the youthful fancy of the child. This danger increases with age. A young child is more concrete in his attitude. He would admire a person of flesh and blood, some one whom he personally knows. With increasing age however the range widens, and the weakness for public characters, cinema stars and historical character may develop. Boys are more prone to this cult of hero worship than the girls. Besides this sex difference there is the individual difference caused by innate abilities also. The lively extrovert type of boys will prefer bravery and quickness. Introverts prefer the poets and painters. Thus we find that we can not judge the growth of moral standards simply in terms of growth and development. It is the total effect of the impact of the family standards on the standards of the neighbourhood, the result of mixing of subgroups inside the school or play field, the standards set up in the schools and also of the various means of mass communication.

Perhaps the conflict may start at home between the child and his parents when the parents force his attitude into the child. The same may be true in the school when the teacher's dictated code appears arbitrary. In these cases the result may be a violent outburst and a visible sign of conflict between the youth and the adult generation as has been shown by Meredith in his book *Ordeal* of Richard Fernal or by Ravindra Nath Tagore in the character of Lalita in his book *Gora*.

At the other extreme boys and girls who are so docile as to conform to parental standards meekly look upon the standard

different from their own as debased. This may set up intergroup and intragroup hostility such as caste and class prejudices, racial and religious prejudices which have been the cause of many unfortunate clashes and hostility inside the schools.

In the modern world we can not think simply in terms of the home and the school. There are other agencies which are impinging upon the child and forcing their values. The press, the cinema, and the radio have their own influences. They are able even to influence mature adults and create public opinion for better or for worse. How much would be their influence on the immature adolescent or child minds can be better imagined than described.

Perhaps we can trace most of the tensions of the present day in this conflict of values between young and old, between one group-caste or class and another. Perhaps this is unconsciously being fermented by the home and by different media of mass communications without realising the implications of the danger that are likely. In such a situation, it is only the school that can resolve the conflict.

In the first place, the schools must fix up definite rules in unambiguous terms on what the pupils should or should not do in the class. But in setting up these codes of conduct, the schools should realise that these edicts of what one should or should not do, lose their influence gradually as children grow. For then they try to judge things for themselves. But perhaps if the schooling starts early and continue, the force of habit acquired at an early age may pull them on in later life. Secondly, the school standards of command should be based on good sense as may appeal to a reasonable mind for them and then only they are likely to be followed by the adolescents.

The teachers must also realise that each person's conduct and character is the product of not only the general and past behaviour, but also of the behaviour which are hidden and overt (latent), and also of the forces that act on the child. It is from a thorough understanding of each child's problem as an individual that a teacher will be able to plant desirable moral traits in him.

Lastly, the teachers should realise that it is example that teaches better than precept. If a certain standard is set up for the students to follow, the teachers themselves should live up to it, for then and then only the boys are likely to follow. If teachers profess one thing and do another, not only are they likely to

lose the respect of the boys, but they will ultimately find to their dismay that boys instead of profiting by their teaching may follow their practices as the force of practice is much stronger than theory.

Development of Aesthetic Standards :

While, moral standards are the resultant of many forces, that impinge on the child, aesthetic standards depend largely on the upbringing. A child who is born in a musician's family, and one who has been encouraged to sing early, will naturally develop musical talents. In a like manner, one whose early artistic talent has been encouraged will grow up to be an artist or atleast one who is able to appreciate arts. Aesthetic standards grow out of such surroundings as are congenial to them. Development of artistic and other aesthetic talents may not always be on a creative level, for all may not have the genius to create something. But the encouragement given to children, by the elders would atleast develop the powers in an appreciative level. It is the thoughtless ridicule of the adults again which can nip this ability in the bud and freeze the genial current of the soul. Many budding artist, musician has been lost to the community by the thoughtless action of the parents.

To develop aesthetic standards, children should be given opportunities, to grow and to express themselves whether in music or in fine arts, whether in dancing or in modelling things. At this period they should be faced with as little restrictions as possible. Even if the output is inadequate, they should not be criticised. This will encourage their creative urge. Perhaps we cannot expect too much from all. Artistic ability is the product of heredity of environment and of early conditioning, and here we are depending solely on one of these factors namely of early conditioning. But some thing will be done and stamped certainly even on the minds of a pupil whose abilities are otherwise mediocre.

In the second stage, creative work needs critical analysis, and no analysis is better than self analysis. Self analysis is possible only when children know the standards to go by and compare. For this purpose children should be given an opportunity to come across standards of perfection. This should be gradually attained from such standards as are easily accessible to those which are really high. This is possible, if children are taken to art galleries where they can see the works of master painters, to

music conferences, to hear the display of master musicians or the like. The importance of this second phase in the development should not be underrated. Denied this, talents do not develop beyond native achievements which are generally inadequate. Perhaps children of artists and musicians excel others in performance because they are being provided this opportunity at home, for comparing their own performances with those of their talented parents. It is in this stage that the children will be able not only to see the standards, but also to be able to rediscover themselves and find out their own inadequacies.

In the third or the final phase the children will be allowed to go on with their creative work again, but with the enrichment of the standards. At this stage their achievement needs critical examination and evaluation in a constructive manner. It is only when all these processes are followed, that we can expect the artistic talents develop.

Perhaps beginning must be made quite early, when the child is two or two and a half years old. But perhaps the primary schools receiving children at five, may not find it too late, atleast to develop the talent to a certain degree. But the teachers should be patient and persevering enough to pursue all the three phases and should expect only a limited amount of success.

Summary :

A child comes into the world not merely with physical urges and tendencies, but with a mind that can retain experiences and can create things. It is through struggling with his environment, that a child learns about his surroundings. Development of languages and consciousness of symbols for expressions are products of time. If a child can not recall his very early experiences in later life, it may be because their nervous system is not developed. It is also because their first experiences are hazy and require practice to be impressed especially when he has not learnt the economy provided to preserve the experiences by means of symbols. The earliest recollections are moreover not in connected whole, for only most vivid ones or those connected with the attainment of goals are remembered. Language ability develops rather slowly, from simple words they learn to build up sentences of connected words. Environment has an influence in developing language ability. Association with adults develops vocabulary faster than association with one's own age group. In the former, one gets opportunities of finer vocabulary. More concrete objects

are brought before the child, the greater will be his vocabulary and here children of higher socio-economic group seem to have an advantage over the ones less favoured. Besides language, toys become the second set of symbols for the child to widen his experience; some he gets ready made and others he improvises but both enrich his experience.

In the school, children learn a new set of symbols namely the written language. Perhaps it will be better to have the language of the books as near as possible to the spoken language at home to avoid confusion. In bilingual states, the second language should be begun cautiously and it must be noted that it has not the background of spoken experience at home. It must get due opportunity of being partly oral and partly written in the school. Reasoning power should be developed in the children through simple situations of cause and effect, and there should be enough concrete experiences serving as the background to develop this power. Probably it will be better to begin History through biographies without time sequence and Geography through experience of vivid environment near at hand. Besides short descriptive accounts of other lands, concepts of time and space are more abstract and require some maturity to be developed. Arithmetical processes should be delayed till a boy is at least seven or eight, and the early experience should be confined to counting with quantities and addition or subtraction of numbers which he can manipulate concretely. Secondary means of communication, radio, press and the cinema as well as adult attitude to the sources of knowledge has profound influence in upbringing of the children, and parents should be careful not to transfer their personal prejudices, likes and dislikes.

Daydreaming in adolescence is an important educative process if properly guided, for through this an adolescent is developing power of abstract thinking and constructive imagination. And a wise teacher should guide him through carefully, so that daydreamings may not develop into a habit of escaping the realities.

Had children lived always in their families, their moral standards would have always conformed to their family patterns. Perhaps it would have avoided conflicts, but would keep such standards ever static. In the play group and the schools the children from different subgroups carry with them different moral codes.

may either make some children rebel against home standards, and create conflict at home and in case of others it may increase the social distance between subgroup by finding the moral codes of new group so different from the one child is used to. This may be taken as a limitation, and perhaps a danger to effective socialisation, but wise teacher can resolve the conflict by setting up the moral codes of schools so early that children get accustomed to them and they should further be based on good sense so as to withstand any questioning. Tolerance to others view point may also be emphasised. Teachers should themselves practice the codes they profess, otherwise they will not be effective.

To develop aesthetic standards, one must follow three steps. Children should be allowed to express themselves freely and their free expression even when inadequate should be encouraged. They should then be shown standards or patterns and be made to examine their one achievement in the light of these standards. Then the children should be made to carry on with creative work once again, but at this stage their work needs critical evaluation. Though schools receive the children some what late for their purpose, yet it is not too late to develop these talents if not in a creative but atleast in the appreciative level provided we being patiently from the primary stage.

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CHAPTER VII

ATTENTION AND INTEREST

What is attention ?

While sensation means merely receiving certain stimuli of which we are just conscious of, perception means the general awareness of these stimuli. In perception, therefore, the sensations which are received convey some meaning. Attention is focussing perception to a definite direction. In a way therefore attention is a cause and an aspect of perception, for in order that perception may acquire some meaning, it is necessary that certain features of perception have to be focussed. Yet it must not be supposed that we attend to only one thing at a time. About a hundred years ago Sir William Hamilton noted that as many as six or seven different objects can be perceived at a time. Cattell found that adults can apprehend six to eleven objects at a time, and if the items occur in meaningful groups many more can be comprehend. Thus if letters are grouped into meaning words and the latter in turn to meaningful short sentences, as many as thirty can be comprehended at a time. It is thus found that in such a situation, the sentence is comprehended as one single unit.

William Jones has divided attention into kinds in various ways. It is either sensorial attention or objects connected with sense or intellectual attention, where the objects are represented either by ideas or written symbols. Thus when we concentrate on a toy or a picture, the attention is sensorial. When we are reading a book, the meaningful words are expressed by mere symbols and hence the attention is intellectual. When the book represents a story with complex characterisation, the intellectual element is still further raised to a higher level. In another system of classification, attention may be immediate, when the topic or stimulus is interesting by itself without relation to any thing else. Thus as the sweets are dangled before the child, the child pays attention to the movement and the attention is immediate. But attention may also be derived in which case the child's immediate interest may not be connected with the thing acting as the stimulus, but the source of interest springs from an object with which the particular stimulus is associated. Thus a student

may pay attention to a verse not because the verse itself is interesting, but because the student has been promised a reward on successful recitation of the verse. The source of interest here lies in the promised reward and that in the successful learning of the poem is derived. There is yet a third way of subdividing attention. It may either be passive, involuntary and effortless or active and voluntary. Involuntary attention always accompanies an intense or voluminous or sudden impulse. It is always immediate and generally sensorial, though rarely intellectual. When we are posing to take photograph the sudden flare of the flash light may draw our immediate attention. Riding over a running bus, the sight of a magnificent building may likewise draw our attention and so would unexpected appearance of a person who has been reported as dead. But all our sources of attention are not involuntary. Some times we make an effort at attending to some thing. Voluntary attention is always for a derived object. If the stimulus is interesting by itself, attention will come automatically and involuntarily. But if it not so, we consciously make associations of the source of our attention and the particular stimulus which is before us, and direct our effort to the latter in order to reach the former. Though generally intellectual, voluntary attention may be sometimes directed to sensorial subjects as well.

Constancy of Attention :

James has also found that the nature of stimuli for attention fluctuates with age. While children are more excited with immediately exciting and sensorial stimuli, the adults are generally trained to select those stimuli which are connected with permanent interests, and our attention grows irresponsive to the rest. It is therefore no wonder that the famous mathematician Archimedes could quietly workout mathematical problems amidst the din and noise of the Roman invasion, and was so engrossed in his work that he took no precaution to save his life and ultimately met a cruel death. It is because mathematics and become the source of his permanent interest, and he was completely impervious to all immediate stimuli.

Cruze says that the teacher who requests 'whole and undivided' attention of the members of his class is guilty of a loose talk, for attention can not be otherwise than whole and undivided for the moment when one concentrates towards a particular stimuli, whether it be a picture of a group of words or

a statue which we see, or a musical note we hear or the smell of musk. It is of course possible that attention may fluctuate or the focus may move from one stimulus to another just as the eye of a person surveying a room shifts from one part of the room to another at short intervals. This continual shifting of attention should not, however, worry a teacher unless the shifting takes place outside the general area. The person reading an exciting novel shifts his attention from line to line, from page to page and yet his attention to the novel is sustained for hours. The spectators of a match shift their attention from one side of the play field to another along with the running ball and yet their attention to the game remains sustained till the match is over. The best way to maintain a sustained attention is thus by developing an intense interest in that area or activity. When other stimuli begin to draw attention from the object which we want to focus our attention to, we call the latter distractors. When we are distracted, we are not attending to the situation, which we feel should be receiving our attention. Distraction, like attention may be sensorial like noise, want of light bad smell or any attractive object, or it may be intellectual. It may either be immediate or derived. It may be external or internal. Hunger, nausea, tension, worry, anxiety and similar things act as internal distractors. Distractions are thus conflicts between stimuli, and we try to avoid them. Thus we may avoid distraction of the noise in the hostel and go to study in a quiet park. We may also overcome distractions by expanding an increased amount of energy or by creating an interest in the subject.

Interest: its importance:

People vary greatly in their interest, which acts as the source motivating attention. The same situation may produce different kinds of interest to different persons. Thus a farmer inspecting a plot of land would be interested in the nature of the soil and plants growing on it, while a geologist will be more attracted with the layers of rocks exposed as the road is built through some hillock in the plot. A contractor may look at the same plot and think of how it can be subdivided and used to make residential buildings, while an artist would walk round until he found the position from which the landscape looked as a balanced composition to be painted. Thus all the four persons are looking to the plot with different interests and each is focussing his attention to a particular point of his interest. The interests supply the necessary

source of energy to focus attention or to sustain it and also to overcome distractions, if any. Thus it is found that though we may spend the same time in reading a novel as we might in working a number of mathematical sums, yet we shall probably feel a greater strain in the latter. It is because the latter act has less interest. It has been seen that interest reduces the fatigue considerably and the work itself proceeds quite smoothly. What will constitute an interest? Are we interested in an act whose outcome brings us to a desirable end? This leads to a further question, who is to decide what end is desirable? The answer to that is, it is the pupil who is really the person who has ultimately to decide, for real interest can not be created, it has to be generated within the person. But while ultimate fountain head of interest is the child itself, it is undeniable that interests are not really inborn, except those basic urges which are necessary for the support of the life itself. Most of the interests are acquired in the society in which we live. Thus it is seen that in most of the cultures men are more interested in adventure, in a physical activity, in mechanics, in aggressive games, and while the women are interested in artistic work, in domestic activities and in humanitarian services. It is so because these are the very roles that the two sexes play in their later lives in our cultures. Alexander Goldenwiser has found that in some of the cultures hunting is done by women and cooking and housekeeping by men. It is natural that in those cultures the boys will be more interested in playing with dolls and the girls would play with spears, bows or arrows. It is thus clear that, if we want the child to be interested in any educational activity, we must select such acts as are connected with the way of living in a particular area. In other words, education will be interesting, if it is connected with life.

How to make our lessons interesting?

From this we get the important cue that in order to make the lesson interesting, we must connect it with real life situations. Dewey has further stated that in order to sustain interest, the goal should be quite visible. Analysing the play activities, he states that the reason why a child is interested in the play activities is, that the outcome of the play is immediate. The child's action immediately leads to a result. In our so called work activities, the child is not so interested simply because the outcome is so far off. How can we expect a child to put in strenuous

effort at the beginning of the session in his class work, if the outcome of his efforts will produce results at the end of the whole year? He thus advises us to devise our programme in such a general way that we may say that interests are created in socially useful activities. One may probe deeper and find out the particular region in which an individual is interested. For these we have individual interest tests. Most interests are measured by personal inventories. The subject indicates his likes and dislikes by appropriate markings of words and phrases, measures of interest tests of information, of objects and activities. There are special interest inventories and tests like Strong's Vocational Interest Blank in which about 400 items are put, and the subject marks them with his remarks 'like', 'indifferent' or 'dislike'. Thrustone, analysing the Blank found that there are really four basic interests: Science, Language, people and business. Similar interest tests are available for recreational, literary and other fields of activities.

Summary:

Attention is focussing perception to a definite direction. Though a person can direct his attention to several things almost simultaneously, it has been found that he really focusses his attention either to one single object or to a cluster of objects. Attention can be divided in various ways, it may be sensorial or directed to objects of immediate perception or intellectual or objects represented by ideas or symbols. It may be immediate or connected with the very thing before the person, or derived in which the thing may merely act as a stimulus to an outside object or idea. It may also be passive or involuntary or active. It has been seen that while immediate interests are always involuntary, derived ones are voluntary or active. The latter distinction does in no way differentiate between sensorial or intellectual attention, both of which can either be passive or active though in a majority of cases intellectual attention is active. While children are more excited with immediately exciting and sensorial stimuli, more mature persons are generally trained to select matters or more remote and permanent interests. Attention is seldom steady, but it fluctuates. There is no harm if this fluctuation is kept within bounds. A reader in reading an interesting novel shifts his attention from line to line, and yet retains his major interest in the outcome of the story he follows. Distractors like noise, bad illumination, act as impedi-

ments to attention. These may be immediate or derived, external as well as internal (like hunger, worry or anxiety).

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EXERCISES.

1. Define attention, what are the various ways in which attention may be divided.
2. What is fluctuation of attention ? To what extent can it act as a distractor ? Give examples in support of your answer.
3. What is the relation between Interest and Attention ? What is the best way to arrange your programme so that your lesson may be interesting ?
4. How is it that a Child is more interested in games than in work ? How can you make work generally interesting ?
5. Write short Notes on (a) Strong's Vocational Interest Blank (b) Distractors (c) Derived Attention.

CHAPTER VIII

REMEMBERING AND FORGETTING

Early theories of Remembering :

The object of learning is really remembering. When we learn any thing, the ultimate object of our doing so is to retain what we have learnt.

The oldest theory of remembering like that of learning is association, and this idea was first given out by Plato. Plato said that we remember things by nearness or contiguity of experiences. The sight of the lute may call to the mind either the tune or the player who once played the tune very well. Aristotle said that recall takes place through suggestions. One item causes us to recall another, because they are either similar or else opposite in form. In both cases there are certain significant points that suggest the second when the first is present.

David Hartley in the eighteenth century differentiated between two types of associations. If impressions are made simultaneously, we get synchronous association, otherwise we get successive association. In 1820 Brown put forward certain modifications to Hartley's theory. He said that we associate and remember according to four conditions:

1. Relative duration of the impression: longer the duration the greater will be the impression received.
2. Vividness: the clearer the impression, the longer will it be remembered.
3. Frequency: the larger the number of impressions, the greater will be the effect of them on the memory.
4. Recency: more recent events are better remembered than more remote ones.

Nine years later, James Mill repeated the same theory which had been stated by Plato centuries earlier, namely it is the contiguity of associations that helps us to remember things. Hamilton however disputed this and held that one impression does not always revoke a single idea, but really recalls the whole situation of which both the impression and the association were parts. The sight of a lyre for instance, does not recall simply the tune or a particular player but the whole conference in which the tune

was previously played, in which both the tune and the player will perhaps stand in a slightly bolder prominence.

In 1885 Ebbinghaus carried out his famous Nonsense Syllable experiments to analyse the function of learning and remembering. He thus attempted to reduce the problem to its basic elements. Ebbinghaus's experiments on learning and memory from a connected series deserve mention and perhaps it will be better to devote a complete section to it. From his findings, however, it was established that learning is not a continuous process, but it takes place in stages. In remembering much that is learnt is forgotten soon, but what remains goes on for a longer time, rate of forgetting becoming slower as we proceed. The two factors involved in spacing learning periods for effective remembering are:

1. The length of the learning period and
2. The successive interval between two learning periods.

Warden studying maze learning found that if a rat was forced to run a maze in order to get its food, it learnt better, if it was given successive practice for shorter periods for several days than when the practice was continued for one long period on a single day. There is however no hard and fast rule about the length of a period or the interval suitable for all cases. This will clearly depend on the nature of the task set. When the material is easy and the motivation is high, probably a longer period or two long periods of learning may do. But when the task is different or when the interest lags down it is possible that boredom will set in if the practice period is long. Well-distributed frequent short periods may be better.

Ebbinghaus's Experiments on Learning and Memory :

Though much criticised, the experiments on nonsense Syllables by Ebbinghaus is a classical one being the first objective method to assess the relation of learning to retention. It also finds out to what extent do fatigue and boredom prevent both learning and retention, Ebbinghaus selected nonsense syllables for examining the process of learning and remembering. He felt that when ordinary words are selected, they may convey different meanings for different individuals. Thus some persons have a better significance for certain words than others, and therefore, such words may be learnt better and remembered longer not for their basic qualities, but because they happen to have a greater stimuli of the meaning. In selecting his

syllables Ebbinghaus, therefore, wanted them to be nonsense so that every learner may be placed at an equal disadvantage. He further made certain rules about their formation. The syllables should be so selected that the consecutive syllables should not together form a familiar word. Further all the syllables should be of the same length, for then the longer or the shorter syllable may be remembered better because of its peculiarity. All syllables should be similarly constructed. He suggested that they should have two consonants and a vowel in between. The same vowel should not be repeated in two consecutive syllables nor should the initial and final consonants of two consecutive syllables be the same. Even the initial consonant of one syllable should not be same as the final consonant of its immediately preceding syllable. All these, he held would help in the retention of the pairs of syllables. All the syllables should be presented to the subject for exactly the same interval so that no one gets a prominence by a longer presentation. This can be ensured by presenting the syllables through a tachistoscope where the syllables are pasted on the roller and only one is visible through the opening. The movement of the roller is timed by a watch or a metronome. The number of trials or presentations necessary before a subject is able to recall, would demonstrate the rate of learning of a person. When the full list has been learnt, it has to be confirmed by a second presentation which should also be repeated in full. The number of words learnt on each presentation can be plotted on a graph and thus the learning curve may be drawn. This generally shows a steep rise at the start followed by a general flattening which is again followed by another steep rise. At the flat portion, evidently, learning has been slowed down, and this Ebbinghaus calls Plateau. There may be more than one plateau during learning in some cases. The existence of these plateaus signify either fatigue or boredom.

Ebbinghaus has also used his experiments to measure memory. This is measured by asking the subject to reproduce what he has learnt after an interval which may be from a few hours to a few days. Evidently, one does not remember the whole list fully (except in rote cases), and therefore needs another series of successive presentations before he can recall the whole list again. But it is also seen that in relearning he needs fewer presentations than before. The difference between the number of presentations at the first and on the second occasions would measure the person's memory. Presenting the list after succes-

sive intervals, sometime longer and sometimes shorter, may help us in finding out the rate of forgetting. Ebbinghaus found that 44% of the original material in nonsense syllables are usually retained after an hour or two. After nine hours this falls to 30% and after two days it falls down to 28%. There is, however, a lot of individual differences, some persons are found to remember the whole list even weeks after. In India it has been found, that on an average, the retention of nonsense syllables is higher, over half is remembered after two hours, 37% after 8 hours and 31% after a week. The experiment thus serves several purposes. Subjectively, it can compare the memories of two persons. Objectively, it shows the important fact that much of what we learn is forgotten at the earlier stage.

Seashore repeated the experiment using nonsense geometrical figures where each figure consisted of three lines, two of equal length and one shorter (resembling Ebbinghaus's distribution of vowels and consonants) so arranged that they neither resembled any letter of an alphabet known to the subject nor any known geometrical figure. With these results, we can likewise draw learning curve for the initial set of presentation and memory curve for successive presentations. He also got result like Ebbinghaus regarding forgetting.

Psychologists like Bartlett have criticised the technique of Ebbinghaus. They hold that when remembered the syllables no longer remain nonsense, the subject by virtue of some association, chance association perhaps, if no logical association is available, creates a certain amount of sense. Perhaps certain sounds in nonsense syllables and certain configuration of space in geometrical figures create this stimuli of meaning. Thus all that Ebbinghaus and others have done is to drive out the natural stimulus of meaning and create room for accidental and totally uncontrolled factors, the stimuli of accidental associations, bonds of which will naturally be different with different persons.

Researches after Ebbinghaus :

Researches after Ebbinghaus have established that mere passage of time does not cause a person to forget. Other factors like interest and tension come in for they cause better attention. Zeigarnik gave a number of pupils some twenty puzzles to solve and along with these puzzles he included a few problems which touched matters of their interest. While the pupils were working for the first half of the period the pupils

were interrupted, but for the other half they were free from interruptions. Normally one should expect that the second half which proceeded without interruption would be remembered better, and that they would forget most of what they had learnt during interruption. But contrary to expectations, it was found that they remembered and could recall more of the solutions that had been performed in the midst of interruption, than those which proceeded without interruptions. Zeigarnik explains this strange behaviour by ascertaining that since interruptions created a tension in the mind, attention was evoked better by the tension and hence the subjects could remember better.

Emotion affects both learning and memory. Freud explains forgetting in terms of his theory of repression. We tend to forget unpleasant memories and ideas because we repress them. In the same way we forget the names of faces of persons we dislike. Meltzer and Stranger have however tried to work out quantitatively the extent to which dislike aids in helping us to forget. It seems from their experiments that the amount is not very large, being on the 15%. Evidently, both Freud and the other experimenters show that when repression cause a certain amount of tension, the forgetting would not be so easy.

Jenkins and Dallenbach have shown that if after learning a new thing, we fall asleep, we are likely to remember it better than when we keep awake after learning. The explanation of this is obvious. When we are awake we can not help new impressions entering into our minds and these would certainly overlap and reduce the intensity of the impressions. But when we fall asleep immediately, we prevent such possibility and this helps us to retain things.

Muller and Pilzckar have found that memory of a newly learnt poem may be interfered due to learning a second poem. Subjects were found to recall 56% or even more of the learnt material, if there had been no additional assignments imposed. But when engaged in more than one task, they can recall less than half, often 26% or less. This is also due to other impressions overlapping. Busy people are often found absentminded, because new images are being blurred by the appearance of overlapping images. This they called 'Retroactive Inhibition.'

Jost has found a principle of review which is commonly known as Jost law. Stated briefly, it holds that if two associations are of equal strength, but have been learnt at different periods, it will be seen that with passage of time the older one will lose

its intensity though rather slowly. In order to retain a learnt material therefore frequent relearning and review are essential. Thus, Jost really found for memory what Thorndike had stated for learning by two laws of Frequency and Recency.

A mysterious effect was noticed by Ballard in 1913. He found that sometimes after the passage of time, old and forgotten things become vivid once more, even if an attempt of review is not made. This he calls "Reminiscence" and should not be taken as opposing Jost law in any way. Ballard's findings are for single items that are learnt, while Jost's findings relate to a comparative retention of two items. Ballard's findings are also complementary to Ebbinghaus's findings, for he assumes that after an initial learning, a lot of learned material seems to be forgotten. What Ebbinghaus assumed as forgotten, Ballard holds that they merely sink to the bottom of the mind so to speak. Some of these sunk material may suddenly rise up under certain conditions. Strictly speaking, reminiscences are not so well found in case of nonsense materials. It has generally to do with experiences which are more meaningful. Perhaps by getting fresh stimulus of association, conscious or unconscious, there is a sort of apperception and, therefore, the old things also come up. This kind of reminiscence is more common with childhood experience than with experiences of later times.

Remembering in terms of Gestalt Theory :

Gestalt theory holds that all mental Phenomena have a structure or pattern, and that ideas and events are never isolated. They always exist with some connection or association with each other. If these connections are just perceived or vaguely remembered, naturally they will not have so much effect as when they are intelligently perceived. When the relations are duly understood Gestalt theory proves why it is easier to remember the whole poem rather than stanza by stanza. Gestalt theory will explain "Retroactive Inhibition" or interference of one learnt material by another by assuming that either they do not represent two different portions of the same pattern or two contrasting patterns, or else if they belong to the same pattern or configuration, they interfere because connections between them are not well understood. Reminiscence according to Gestalt is nothing but a rehearsal of the entire situation which comes up when the general pattern is recalled and all the portions including things that were apparently forgotten get recalled.

Summary :

The gains of learning are really in the direction of retention and remembering. As in learning so in remembering, the Associationists' explanation would be: by creating bonds of association experiences are retained as so many bundles of thought. Hartley, and Mill as well as Brown subscribed to this theory and made substantial personal contributions to it. The best and the most well known experiment on Association had been Ebbinghaus's experiments on nonsense syllables which assume that when the stimulus of meaning had been driven out, the act of the basic elements of learning would be analysed. The conditions imposed in the section of syllables and in their presentation prevented any type of bias creeping in and the experiment was able to show the nature of learning and of forgetting. Learning and memory curves showed for instance, plateaus of boredom or fatigue during learning, and the important fact is that much is forgotten at the initial stage. His experimental results have been corroborated by similar experiments in other fields, notably by Sea Shore. Psychologists like Bartlett, however, express some doubt whether Ebbinghaus has after all succeeded in driving out the stimulus of meaning, for they hold that perhaps accidental associations are able to give meanings to these nonsense syllables.

Recent research like those of Zagarnik, Freud, Meltar and Stagner have proved that our retention is not merely dependent on the article, but more on the attitude of the learner. The common assumption is that interruption causes distractions and make us forget things quickly. But that is not the real fact. They may cause tensions and thereby things get better remembered easing the mind to strain calling forth better attention. Emotional changes and interest are also vital factors. When two things are learnt simultaneously one learning overlaps the other, this perhaps explains Jenkins findings why we seem to remember better when we fall asleep immediately after learning. Muller and Flizkar have given a special name to this interference of the second material namely Retroactive inhibition. Jost rules that of the two associations the older one is forgotten unless reviewed, is really a repetition of Thorndike's Laws of Frequency and Recency. Ballard found that very often forgotten things are brought back into the mind, proving that they remained sunk perhaps at a subconscious mind, proving that

they remained perhaps at a subconscious level just to come up by way of reminiscence.

Gestalt psychologists holding that all learning and remembering takes place under a pattern or configuration, have given their own explanations of learning and remembering and also of the phenomena of Retroactive Inhibition and Reminiscence in terms of their pattern theory.

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EXERCISES

1. Describe an experiment of memorising Nonsense Syllables discussing all the precautions taken in the choice and administration of these syllables.
2. Explain the nature of the curve of learning and account for the plateau in it.
3. What is Retroactive Inhibition and how does it interfere with the learned material? What other causes are responsible for forgetting?
4. What is the relation between memory and interest? What advice would you give a student to assist him in learning a long and difficult lesson.
5. What are the principal causes of educational forgetting? What measures would you suggest for counteracting them?
6. Explain the importance of laws of association for learning and memorising. How will you utilise these laws in teaching?

CHAPTER IX

PERCEIVING AND THINKING

What is perception ?

To a man in the street there is hardly any difference between perception and mere looking. To a scientist, however, perception has a wider significance. It means receiving impressions through any of the senses, sight, hearing, smell, touch, or taste. In a psychological sense it further involves two things namely to receive the sensation and to interpret them. Good sense organs of sight, hearing, smell or the like are of course necessary, but besides these there must be a proper span of attention and of motivation.

Thomas Reid distinguished between mere sensation and perception. In an ordinary sensation, the sense organs receive certain impressions and there the matter ends. In perception, there is not only a stimulus but also some meaning, which can be derived by a sense of awareness or knowledge of the subject. We may for instance see a red flower, redness and roundness are perhaps sensations (though they too need previous experience or acquaintance and in that sense they are also perceptions). But to recognise that flower as a rose, a previous knowledge of the details including smell is needed. Brown holds that perception is really grasping of relationships. We perceive not merely similarities, but the differences with other objects to establish peculiarities. Before we have perceived the red flower as the rose we have not only noticed how it resembled our previous impressions of roses, but at the same time how the particular flower differed from other red flowers. Wundt and James hold that perception combines a number of sensory elements. When we perceive a rose for instance, we considered not merely the colour and shape, but its smell as well. The sensation of pleasure that a cup of tea offers is a combined sensation of its warmth and its flavour which is a blending of two more sensations namely smell and taste. Thus touch, smell and taste are all involved in it.

Cattell working on attention span found that adults can apprehend six to eleven objects at a time, provided the objects are not too big. The average is generally eight. If however items are bundled into groups more can be perceived. An ordinary person can note as many as thirty letters provided these letters make a meaningful sentence.

Urban Schis and Necker found that our attention fluctuates. We can test this fact ourselves through many experiments. The cube given in the appendix will serve our purpose here. On looking at it sometimes the surface ABCD appears in front for a while, and PQRS at the back. At other times PQRS may appear to be in front: ABCD at the back. What is true for sight is true for other senses also.

William James and Edward Titcher holds that when we pay attention to some thing, we bring it to a focus and other things go into the margin of our attention. Morgan studied the problem of distraction. Subjects in a certain experiment were made to learn a certain code on a kind of type-writer by punching certain signs. While they worked bells were rung. For a short while in the earlier part, the work slowed down showing the effect of distraction. After a while, as the subjects got used to the sound, the distraction did not have any effect on their perception or attention, and they worked in their usual speed. Now the bell was suddenly stopped. Curiously enough work slowed down again. The explanation is quite simple, formerly the bell was causing distraction, but the persons got used to them. After a while it is the stoppage of the sound, they were used to, that caused distraction. Titcher also found that the size, motion, colour or as a matter of fact any stimulus which can stand prominently against the background of experiences, serve as a factor to control attention.

Cattel working on the reaction time apparatus found that our attitude or expectation influences the speed of our reaction. Some subjects were asked to concentrate on the response they should make when they saw the light. After a while they were asked to concentrate on the stimulus itself. It was found that they worked faster in the former case.

Watt, working on controlled association, found that when a subject was told to give the opposite of each word, he usually adjusted himself to this unusual situation by practising a few sited before-hand. While he had thus practised, the perception of opposites became automatic.

These experiments threw much light on perception. They showed that factors like distraction are relative to the situation, we get used to. In case of opposites, we adapt ourselves to a situation to be ready to receive the stimulus and to perceive. Perception thus needs a preparation.

Gestalt Theory and Perception of Distance :

Wertheimer, Kohler and Koffka have held that our experience is a total process in which parts can not be easily differentiated or analysed. We perceive a rose as such, we can not isolate either the colour or the shape and say that this is rose. Even in case of its smell, we can not isolate the several items that blend together to give us the peculiar smell of a rose. A cup of tea of a peculiar blend is perceived as a whole and declared delicious. We can not break it into its elements of taste, smell and other things that make its flavour.

Kohler trained a hen in such a way that when she picked up grains from a grey paper, she was permitted to eat them. When she picked up the grains from a white paper, she was driven away. By and by, she became so used to this situation, that the hen would pick up only from the grey paper. After a time the white paper was removed, and the grains were spread over two papers, one black and the other grey. Now it was seen that the hen went straight for the black paper, thus showing that what the hen perceived was not the particular paper which was grey, but to the entire situation, namely the comparatively darker of the two bits of papers.

An illustration of the false deception, how our eyes can deceive us is shown in the figures given in the appendix. The lines AD and CD are of equal length, and yet CD appears longer, because of the projection pointing outwards. The lines PQ and RS are parallel and yet they appear approaching each other because of the trim transversal lines are approaching each other.

In these two illustrations also, the total situation affects us. Perception of depth is caused by perspective lines converging at a vanishing point. This was found and used first by the clever artist Da Vinci. Here too the total situation, the relation of a thing with respect to its background that gives us the idea of the depth. Descartes' discovery that changes in the eye help us to gauge the distances, looks at this issue from an organic stand-point, but this kind of accommodation of the eye itself is an evidence that we perceive things together and that our eyes try to accommodate all.

It is on this basis that Whetstone constructed stereoscope in 1838. Two pictures that were presented to the right and to the left eyes were not exact carbon copies, but they had slight differences only. It is by accommodation to these differences, that

the eyes get a vivid impression of the depth. This fact thus objectively shows not only the accommodation of the eyes but also a tendency of reaction towards the total situation of the Gestalt.

Thinking and thought process : Behaviourists' View :

Up to the time of Wundt, it was believed that images are absolutely necessary before thinking can start, and that our thoughts go in terms of sensations, images, and feelings. Blinet and Oswald Kulpe tried to disprove this but it was Buhler who succeeded in giving an experimental evidence. Buhler tried to analyse the thinking which evolved when a subject was confronted with a paradox. The apparently impossible things in a paradox should at once strike the subject had he used his past images, but he found that a subject was made to think and draw conclusions thus showing that an image is not necessary. Likewise, a subject may be made to think and draw conclusions when he hears a fable. Certainly, in this case there are no images, for no one has heard an animal talk, yet there is thinking.

Robert Woodworth's publication, 'Imageless Thought' also gives evidence of sensations not affecting our thought process though evidence of such sensations received in the past may be provoked deliberately by introspection. Based on these and on his own experimental evidence, Wundt held that the core of thinking process was merely a conscious perception of relationship and not necessarily of past images.

Watson put forward the view point of the behaviourists on this subject. According to him, thinking is nothing but talking to one's ownself in a manner that no sound is being produced. Sometimes, many of us, especially children, think aloud. We generally give up this process as we grow older, because we are afraid of being ridiculed. Watson believed that thinking can go in terms of any muscular experience. Certain deaf and dumb individuals, he found, try to think by moving their hands, thus showing that they are merely repeating the mode of expression that they otherwise use. Under normal circumstances, as we speak, these individuals express themselves by show of hand. While thinking they are using the same method, or in one sense they are thus thinking 'aloud'.

Experiments by other psychologists have, however, failed to reveal any significant relationship between thinking and move-

ment of vocal muscles, perceptible or otherwise, which would have proved this theory.

Several hypothesis have been put forward. According to the motor theory, thinking is something like muscular action. The supporters of this view point have not, however, been able to give sufficiently convincing experimental evidence.

In 1939, Berger reported that he had found the existence of an electric current with about ten oscillations (to and fro movement) per second when a person is made to think. This he called 'Brain Waves'. Berger found this by placing two metallic rods or electrodes on the surface of a person's skull. These were connected with a Galvanometer or an electrical measuring instrument while a person was thinking. Berger's followers have claimed that the intensity of waves increased as a person's mental age increases. Unfortunately, not many researches have been carried out in this direction, and all that one can say at the present moment that when sufficiently convincing evidence is available, this may change our present trend of psychology and establish once more that thinking is a process in which brain alone is involved. At present, however, we are not in a position to assert this so convincingly.

Thinking Process in terms of Gestalt Theory :

Gestalt psychologists have introduced 'insight' to describe the thought process. Persons, it is held, grasp relations unconsciously and the solution of the problem strikes one suddenly. Kohler found many examples of insight in apes. If food is hung from the ceiling of a box, the apes could pile up boxes to reach it and some time they would pull the food down by attaching one stick to another, if a single stick would prove a bit too small. This attachment would be conveniently done. These do not show a mere chance reaction as has been claimed in the solution of maze problems, when an animal was to run a maze to procure its food, more or less blindly. Kohler held that even in the maze problem entire relationship was surveyed before the problem was solved. Tolman and Honzik built an elevated maze, walls were transparent, so that a rat could see the type of maze they ran through. Within the maze there were two paths, one shorter than the other. The fact that 90% of rats chose the shorter path was a clear evidence that their choice was not a matter of chance, but a result of deliberate insight into relationships. When however a hurdle was kept along the shorter path, the rats chose

the longer path which did not have the hurdle. This is again a result of the perception of the total relationship.

Hunter kept three boxes. Only one of them did contain any food, and this was momentarily lighted, children were told to find their food from one of the boxes. Perhaps at the start, they made a few mistakes, but after a while, they could reach the right box without any mistake. That this perception of the right box was associated with lighting, was proved by switching on the light to a wrong box. Then the children went to the wrong box invariably for they had grasped the relationship of the box and the light.

Reasoning :

Reasoning is an orderly or logical sequence in which thinking follows. John Dewey has established five distinct steps involved in a reasoning process:—

1. There must be a problem, some perplexity or difficulty. If every thing runs smoothly where is the need for an individual to exert ?

2. We must be able to locate or define the difficulty. If then, the situation is so complex that we can not make a head or tail out of it, we are likely to give up attempts or solving it, and get desperate. There will be no attempt at reasoning, for there will be no attempt of problem solving.

3. While reasoning, we try to put forward a hypothetical solution. This is only a tentative or a trial solution, and while putting forward, we are conscious that in the light of further investigation, we may be required to modify or alter it.

4. We examine and develop this hypothesis in the light of the given conditions, and see whether the hypothesis meets all our requirements.

5. We finally verify our hypothesis or put it to actual test to see whether it actually fulfils all the conditions. If it does not, we may have to repeat the process involved in steps (3), (4) and (5) with a new hypothesis.

The five steps indicated in the above may not occur in the order given, though it generally does so, but it is essential that all the steps must be involved in the process which we call reasoning.

As an example we may take the case of a man on serving a long pole with a ball projecting horizontally from the upper

deck of a boat. For an observer it may be a problem as to find out why is it put at all.

On attempting to locate the difficulty, the man notices that the pole is horizontal, which at once rules out the possibility of its being a flagpost. The observer is now confronted with two hypotheses, it may either be a wireless post or the pole erected to point out the direction to the steersman. On testing the first hypothesis, he concludes that had it been a wireless post it would have been pitched higher up on the top of the pilot's cabin, for higher the pole the better will be its transmitting and receiving power. If on the other hand, the pole is meant for pointing out the direction to the steersman, it would not be pitched so high as to obstruct the pilot and would be just high enough to be visible from the steersman's place. The former hypothesis, therefore, not being able to withstand verification is rejected and the latter is accepted.

Two types of Reasoning :

Reasoning may be of two types. Sometimes we have already established a law and want to prove the conclusion for a particular case. This is known as deduction and is used in our geometrical theories. We take the particular case of say two triangles whose corresponding sides are equal. Applying the general fact that in such cases, the triangles become congruent, we prove the congruency, of this particular case using the general law.

Yet all our reasonings are not of this type. Many a time, we generalise and get a common underlying truth out of the study of a number of particular cases. This common truth in the concept and the process is known as induction. A child's concept of an animal is for instance formed out of a study of a number of concrete experiences of dogs, cats, goats, rabbits, rats, from which he might have formed the common and essential feature which he called the concept of an animal. Perhaps having drawn this concept, the child uses it to compare new cases and thus applies this inductive knowledge to deduction. Induction and deduction are therefore complementary processes, and are by no means exclusive. When a new problem confronts us, we certainly try to find its solution in terms of our past experiences, and to solve the novel and particular case with some similar past experience or concepts. But after all these concepts or general

ideas are built out of a study of a number of isolated experiences, which are grouped together for facility of remembrance.

Summary :

We find that perception is not mere seeing but is connected with experience of all the senses. It has several characteristics. It is no doubt selective, for we react to one aspect of the total environment at a time, that on which we focus our attention for the moment ; but at the same time we are not indifferent to the total situation which serves as the background for our observation. Perception is moreover a meaningful process. Our past experiences and our present mental set up are both connected with it. Sometimes several sensations from several sense organs are blended together to give a meaning. How many separate items can be comprehended together, depends on the nature and difficulty of the items as well as on the mental age of the learner. Further, it depends also on the fact whether the items can be grouped together or not. Distraction prevents perception but what we call distraction is really a chance in the situation one gets used to. If a person gets used to noise, it is quietness that will become distracting. When we expect a thing to happen in a certain way, our mind gets adjusted to this situation and our responses become automatic.

What constitutes thinking¹, has given rise to many conflicting theories. In very cases, thinking may be as the behaviourists claim it to be, mere talking to oneself, which may or may not be backed by past images. Perhaps under such circumstances, it may depend on conscious perception of relationships. Yet it is not clear whether thinking takes place in the brain alone as Berger claims it to be. His experiments have been carried on such a limited scale, that we are not yet in a position to state whether it would give us a general truth applicable to all cases of thinking. It is undeniable that at least at times, thinking proceeds on the result of the perception of the total relationship. In such cases the final solution comes out as a flash, as if by insight, but it is really an outcome of the analysis of the total situation going on within the mind as the Gestalt psychologists claim.

In more complex cases, we have to reason out in a logical manner which involves not merely a perception of relationship, but also locating it. After locating the difficulty, the mind puts forward a trial solution or hypothesis, which is put to test and which needs verification. If the hypothesis does not stand veri-

fication, it is rejected and a new hypothesis is called for ; if it stands verification, it is accepted.

The two processes of reasoning, deduction or applying general truths to a particular case, or induction or building up a general concept by studying a number of particular difficulties are really complementary ones and one can seldom be used exclusive of the other.

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EXERCISES

1. Describe the meanings of and difference between the following :
Sensation, Perception and Concept.
2. 'If a teacher has secured the attention of the class, he has all he needs',
Discuss this statement in terms of the requisites of proper perception.
3. What is attention. How can the fluctuation of attention be experimentally demonstrated?
4. What constituted thinking? Discuss the statement 'Thinking is nothing but talking to one self'.
5. What do you understand by reasoning? With the help of a simple example show how a person reasons out difficulties.
6. •Deduction and Induction are mere complimentary processes. By Induction we form the concepts and through deduction we test them'.
Discuss the above statement giving illustrations.

CHAPTER XII

MEANINGS, IMAGERY AND IMAGINATION.

Importance of Meaning :

Unfortunately much of what passes for learning in the class room is really mechanically memorized statements which pupils cram without understanding. The inevitable dependence of learning upon meaning is thus being ignored. The language in which statements are given are really means of conveying thought, and are the vehicles of ideas. They must, therefore, be understood, and not merely mechanically memorized. Perhaps, the defect lies in the fact that words that are used are in areas which are remote from the perception or experience of the persons. Words, as such are used to symbolize experiences, and their capacity for conveying ideas depends not on the extent they are able to convey experience. Meanings that these words stand for, are to be evolved out of perception. The perception of the child becomes more refined and generalized, as he becomes more and more aware of the detailed aspects of objects. Thus he recognizes the difference between a round ball which has depth, and a round disc which is flat. Perception depends on the use an object is made of. Dewey has given a good example of the circumstances under which the child learns the meaning of the word 'hat'. Probably his mother before taking the child out puts on the hat on the child's head. The child's primary interest lay in going out, for it meant seeing new things and going new surroundings. But he at the same time noticed the inevitable connection between the putting on of the hat and of going out. Thus the thing, hat, acquired a meaning for him because it was necessary to fulfil his interest. The child's interest in the hat was thus aroused, and the hat became meaningful. Now, if the mother utters the word 'Hat' the child will notice the inevitable connection between the thing in which he was interested and the name. The word hat now stands for the thing, and hence it becomes meaningful to the child. But if we ask a child the definition of hat, he will simply say, it is something to put on the head. Most of the children's definitions are similarly functional. A chair is something to sit on, a ball is something to kick. Perhaps these definitions may not seem to be quite logical or exhaustive (complete), but by this method of identifying objects by naming them and

nothing of their specific characters, a child gets the primary basis of meanings. With experience, meanings are extended to other functions, than what the objects are supposed to stand for. This is more true when meanings are extended to actions besides objects, i.e. as verbs are developed after nouns. There is of course some connection between the fundamental or primary meanings and the secondary or derived meanings. The latter are more symbolic and convey something more than what is immediately perceived. But as words are used to convey certain experiences, as soon as a word becomes capable of a primary and one or more derived meanings, it gives room for misunderstanding, for the experiences of the user and the listener may differ. As an example let us take the simple word 'lift' which is a word conveying an action namely 'to pick up'. This is the primary meaning of the word which everybody understands. But this word is capable of giving at least four different types of meanings under four different situations:—

1. Let us lift the book up from the shelf (primary).
2. Give me a lift in your car from here to the station.
3. He got a lift of rupees fifty, as he became the Headmaster.
4. There is a lift, here in this building.
5. Misunderstandings are bound to crop up when the user speaks of the lift in one sense and the listener understands in another. A village boy who has never seen a lift may feel that it literally picks up people from above, or one who is not accustomed to giving or getting lifts in a car may feel that driver literally picks up passengers and the like. Again one may think of a lift as a rise in the salary, while another may understand it as being given work at a place which is served by electric lifts.

From these derived meanings arises again third type of meanings which are abstract concepts of a more generalised nature. Of course not all the words are capable of this type of generalised meanings. But in those that are thus capable, there is perhaps a greater danger of misunderstanding. The user may utter a generalized word without realising its full implications. Such danger was responsible for the development of Socratic method to counteract the abstract definitions of the sophists. Such dangers are no less, evident today. Perhaps our restricted field of experience, vitiates (spoils) the meanings which these terms have on a wider context. To a labourer, *Democracy* perhaps means the rule of the mob on a strike day and Social Justice may convey the idea of an unruly meeting demanding a rise in wages. Their

thoughtless use may produce such situations as may be embarrassing or dangerous. Only after widening the field of experience so as to give a suitable opportunity for such generalisations, that one should use them. Herein comes the role of the school. Since these abstract words are to be used in real life situations, it is the function of the school to provide an opportunity for imitating the life situations within the school, and to show the context in which such generalisations and abstract terms can be used. This is possible only when the school is connected with the life.

How can the meanings be clarified or enriched :

One of the first steps that must be taken to clarify meanings should be to make the fullest use of the environment. Pupil's experience should be supplemented with a great variety of all types of visual aids available. These must as far as possible be the accurate representation of the reality, a toy motor should look like a real motor for instance, otherwise, they may convey hazy and incorrect impressions. In using these representations however, one should remember that aids are just aids and should not be confused with ends. They should not for instance be used in preference to real things when there are opportunities available for showing real things.

Since it is not always easy to communicate specific objects or experiences, as they are so many, we must classify such experiences and arrange them into groups so that they become more handy, useful and, therefore, more meaningful. Here we are really borrowing the technique of the labour-saving device shown by associationists.

After generalisation, ideas have to be abstracted or the essential process must be taken out of the specific and concrete situations. This is possible by a careful survey of the specific or concrete situations and extracting from them the essential element. The boy's idea of 'affection' for instance, is the result of the generalised concept of a number of concrete and specific situations of a mother fondling her child, a bird feeding its young, or a girl playing with her dolls. His concept of 'democracy' may likewise be built for him in the school by what he sees in orderly organisation of his literary societies, students' governments in his hostel or in his sports organisations.

We thus find that whatever be the type of the meaning, primary secondary, generalised or abstract, we can get them only against the background of a concrete reality or specific cases and

situations which both clarify and enrich these meanings. Some of these concrete situations are of course provided by the home or other agencies that are giving informal education. It is the work of the school or any other institution where professor is to give a formal education to think of other situations and provide opportunities to the students to get as near as the concrete reality as is possible. This the schools can do provided they leave off the practice of remaining isolated from the life and identify themselves with as many of the life situations as are practically possible for them to do so.

Imagery and meaning :

The meaning that is gained in any situation is stored inside the mind in the form of images. These images are later recalled when the need for them arises. Images arise out of specific experiences, that an individual has. If a boy uses lift in the sense of a rise in the salary that his father might have got in the office, and another uses it in the sense of a free ride that a kind motorist gave him on a rainy day, it is because their experiences differ. Even abstract ideas are generalised experiences of a number of concrete situations as we saw in case of the word *affection*. The gains of learning are clearly the images they form.

We must, however, remember that the images are not merely conservative. They do not only retain what ever impressions are given, but some times they blend one or more images together and reconstruct something new, something that did not exist before. In such cases the images are the causes of imagination. We shall, however, discuss imagination and the role it plays more fully on a separate section in a later portion of this chapter. Suffice it to say at this stage, that even to develop the power of imagination one must have a stock of images which one has gathered from the concrete reality. We must have more experience and a number of images built before they can be blended together. Verily, therefore, we may say 'It is not less impressions, but more that we need in our day to day teaching, whether we build up specific or concrete experiences, whether we have generalised or concrete experiences or abstract images, and even when we want the images to form imagination.

A child of four or five by dramatising the situation, by playing the role of an engine driver, gets an opportunity for his diversion. He is really building up his images of the

engine which he has once seen. Perhaps he is at the same time using the law of practice and repeats the process to get the images of the essential and perhaps symbolic forms of the functions of a railway engine. Perhaps this gives a clue to the schools about the methods they should follow in building up of these images. They may likewise try to give opportunity to practice, with lifelike models or by dramatisation when real things are not available and help the learner to gain more impressions and to consolidate these impressions in order that proper images may be formed.

Theories of Imagery :

In the eighteenth and in the early nineteenth centuries, psychologists used the term 'Image' almost in the same sense as they used 'Ideas', 'Associations', or 'Thought'. They assumed that memory and thinking involved a definite imagery.

Hume distinguished between impressions and images for the first time stating that whole impressions occur in presence of the objects, images are just faint copies of the original impressions. His views were shared by James Mill. Hartly tried to define images on a psychological basis. He held that sensations cause nervous vibrations and arouse miniature feeble vibrations within the brain. He believed that these vibrations coin or build up images.

In 1860 Galton announced the astonishing results of a questionnaire on mental images which he had put to many persons. An ordinaryman had after all a limited field in which his images are formed. But where ever these images are formed they appear to be quite clear and well defined. In case of highly qualified and experienced scientists and literary men however, the case appeared to be quite reverse. They had no doubt images extended over many fields, but such images appeared to be quite blurred and diffused. Women and young boys had fewer but on the whole better defined images than men. Evidently, it seems there is something wrong with image formation in an educational surrounding. Galton ascribed the deficiency of imagery in the scientists to be due to the fact that they were called upon to do a lot of abstract thinking without a concrete background.

As the images are formed out of impressions, and the gateway for these impressions are the senses, it is necessary for us to find which sense in particular is more active in giving us the impression. Different persons, it was found, used different senses.

Perhaps, if we could ascertain which sense is predominating in which person, we may build up his imagery accordingly.

Kraplin and later Smith by using words and phrases conveying sense impressions with different sense departments have attempted to find out which sense department is more predominating. 'A cup' for instance gives the impression of a beautiful utensil to one and thus provides an opportunity to form a visual image. To another with a more developed sense of smell or taste it may convey the flavour of delicious tea, a third with a specially developed taste for food, will probably smack his lips for some taste delicacy that can be served in the cup.

Kraplin used a number of phrases, from each of the five sense departments: visual (sight), gustatory (taste), olfactory (smell), tactile (touch) and auditory (hearing). To these he added a sixth sense Kinesthetic that implies motion. Kraplin's division of the original words or stimuli were such that they were equally divided. The classification of course being subjective, depends on the judgement of the experimenter. The objects were asked to state the impressions, the utterances of these words seemed to convey. It was found that the experimenter's classification of the words did not always convey the classification of the images that the person experimented upon formed. Very often he gave more images in one or more sense departments and fewer impressions in others. Care should, however, be taken while performing this experiment that the actual objects are not present before the subject, for in that case it will be a case of perception rather than image formation. Smith repeated the experiment with phrases instead of words and found similar results. The educational implication of such experiments are important. This can diagnose which happens to be the wider gateway through which the impression enters the mind to a particular student and which is the proper area in which he is apt to form his images. Evidently, to suit his individual needs, we must so organise his education that he receives his impressions mostly through his more important gateway and predominating sense department. It is only then that his images will be meaningful.

Galton found that imagery of abstract things is some times peculiar. To some different arithmetical numbers represent bars or lines of different lengths. To others these represent different colours, different shades of red black or green. The images of different colours are some times blended with auditory times. When they see a red colour they are reminded of a peculiar tune,

and when they see a green colour they are reminded of another tune. Some people have coloured hearing. When they hear a particular tune they are reminded of one colour and for a different tune they have another colour. Such impressions are perhaps results of accidental or chance associations and they often cause much embarrassment to the persons. The remedy lies in freeing them of these impressions quite early in their lives by producing the right type of impressions, they should have of these abstract or generalised concepts, which must come out of not a limited but many concrete impressions.

Stern tried to devise an objective measure of the total amount of imagery, namely how vivid an image a person can form, since all persons do not form equally vivid images. Stern would show a picture to a subject and ask him to recall as many details as he could possibly do. In 1907, Urbantschits and later Jarnesch found that some persons have the remarkable capacity of recalling clearcut images of things presented before them for a short time, say, half a minute. It is evident that the time is insufficient for a normal person to perceive so many details as they have done. Such persons are said to have "Ediatic Imagery". Often they would recall such details as might have escaped their conscious perception, thus proving that their perception has been at least in part somewhat subconscious. Alport however finds nothing very wonderful in this ediatic imagery. It is only the ordinary power of image formation though perhaps a bit quicker and more vivid.

Imagination :

To a man in the street there is perhaps hardly any difference between mental imagery and imagination. Perhaps one may confuse imagination with mere day dreaming which represents an element of wishful thinking in which not only adolescents but some times others adults as well as children sometime indulge. While there is often an element of fantasy in day dreaming, in imagination, as defined by psychologists, there is also a creative thinking.

It is a process that leads to practical and constructive ends, though it may not always lead to tangible results.

Helmholtz studied his own creative thought process. He found that they were results of prolonged deliberate effort which often made him tired and distracted. Solution would come to him in the form of inspiration after some rest.

Henrie Poincare and Rosman found that creative ideas would come to an inventor only when he is somewhat in a relaxed mood. It would sometime come when a person is asleep and sometime after he would wake up after a sound sleep. Rarely however they appeared just before dropping off to sleep. As one can sleep only when he is free from distractions and worry it follows that creative thoughts can never come to a worried and perplexed mind, but would appear only when mind has got over its perplexity, either by going to rest or just after rest.

Ribot and later Graham Wallas studied the process more scientifically and though their investigations show some differences in minor points, yet in essential points they both agree. They found four essential elements in imagination:

1. First of all there must be a desire to solve the problem. This Graham calls the preparation stage.

2. For a long time this desire troubles the person without bringing out any solution. It is a long and painful period of racking one's brain. Graham calls this the period of incubation in which ideas often recur to the mind, but does not give any solution to the problem.

3. This is followed up by a period of illumination or inspiration in which the solution appears as a flash. Often the person is surprised how he overlooked this simple solution so long. Perhaps he realises that the painful brain reeking process of the incubation period has really brought the solution in a subconscious form, and this has now suddenly risen up to the conscious level with a rapidity that surprises the person himself.

4. Lastly, comes the period of verification or revision, where the validity or correctness of the inspiration is tested by application.

Though, creative imagination considerably form idle day dreamings, yet one must not overlook that abstract thinking is the cause of both. The fact that some of the great inventors and discoverers had been mere day dreamers in their childhood or adolescence would go to prove that one day begets the other. We have already shown why an individual tired or distracted in the real world, covers up his inadequacies by building an unreal world of his own. This often happens during adolescence, when the causes of this frustration are perhaps greatest. If left to itself, this becomes not only a useless wastage of time but produces a bad and withdrawing habit providing a refuse to which an individual would resort to whenever he feels frustrated in real life.

Yet if properly directed, it may give the individual an opportunity to work out great things. Creative thinking is not the monopoly of a favoured or fortunate few. It is open to all who have a good stock of concrete images which are to blend and fuse together, and to all who are ready to take the grind of a painful incubation period.

Summary :

Though commonly confused together, rote or mechanical memory is completely different from meaningful learning which forms images. Because words are symbolised forms of experiences, there is a danger that the sense conveyed by the person communicating may not be understood by the person receiving information. If meaning is derived by the use of concrete objects, the chances of such misunderstandings are considerably reduced. Sometime, however, from the primary meaning an expression has many secondary or derived meanings, each of which becomes clear to a person who has had the experience of the thing, or situations in which such derived meanings have originated. From the derived meanings come the generalised or abstract meanings.

To enrich or clarify pupil's store of meanings, teachers should first of all make fullest use of the environment. Experiences are often classified into groups so that similar images may be formed. Before abstraction, a careful survey of several concrete situations out of which such abstract situations have generated must be made. Whatever be the type of meaning, primary (concrete), or secondary, generalised or abstract, we must have a rich background of the concrete reality or specific cases and situations which make such meanings clear and remove chances for misunderstanding.

Meaning that is gained out of a concrete situation is stored inside the mind in the form of experiences. Images are, however, sometimes reconstructive. The impressions gained in a single situation are of course retained, but very often two images blend together to form a new image which does not of course represent the reality, but a new creation. But even this creation is the result of a background of concrete images.

While impressions take place in presence of original objects and are results of perception, images occur in absence of these objects, and are caused by a process of mental reconstruction of an experience undergone. When experiences are varied, there is a danger that before a proper impression of an object is formed, a new impression is brought out, and both the impressions get

blurred together. It is not surprising, therefore, that for a person whose field of experience is limited, the images are few and well defined, while a scientist with many experiences has a wide area of vague ideas. This is really an unsatisfactory situation, and its remedy lies in forming every image with proper opportunity of experiences. All persons do not have the same type of impressions. Some seem to be more visual and receive their impression mostly through the eye, others may be auditory getting more impression through the ear, there are persons who receive impression through other senses like the nose, touch or tongue or even through a sense of motion. Which of the senses of a pupil is predominating, can be found by the word or phrase list improvised by Kraplin or Smith and this will help the teacher to plan a course of instruction which may be more helpful to a particular student. But this presupposes that instruction should be that either individual or pupils should be divided into groups according to their imagery. It has also been seen that some person's imagery of numbers is by no means of colours, some persons remember tunes as so many colours, while others remember colours as tunes. Besides these peculiarities, some persons have the remarkable capacity of quick perception, a faculty known as Ed'atic Imagery. They can recall minute details after a short perception in which a normal person will hardly notice even half of those details.

EXERCISES

1. It is not less impressions but more that is needed in the modern world is to make education meaningful. Discuss this statement.
2. Distinguish between primary, secondary (derived) generalised and abstract images. How can each of those be developed by a teacher?
3. Describe Smith or Kraplin's Image type experiments and indicate the value of the findings of the experiment for education.
4. How can you develop creative imagination of your pupils? Discuss the steps that intuition undergoes before it gives rise to an effective solution of an apparent difficulty.
5. Write short notes on Ed'atic Imagery, Reconstructive Images, Day dreams.
6. 'Imagination may be building castles in the air but castles if they are to be of any use, must be built on concrete foundations'. Simplify this statement as fully as you can.

CHAPTER XI

INTELLIGENCE AND ITS MEASUREMENT

What is intelligence ?

What actually constitutes intelligence is a matter of controversy on which all psychologists do not seem to agree. In the beginning of this century, Stern defined it as the general ability by which a person can adjust his thinking to meet new requirements. Intelligence was thus a sort of master key which is able to open, or atleast try to open the lock of all difficulties. Perhaps this suited well with his theory of general factor of intelligence, for he held that a person's intelligence is able to work in every field. Patterson gave the corresponding behaviourists' definition, namely, a biological mechanism for integrating stimuli and producing adequate and unified response. It is really Stern's definition stated in other words. Terman who revised Binet's intelligence tests, thus working in verbal fields, defined intelligence as the capacity for abstract thinking. Wechsler, who worked with performance type of experiments, would define it as an ability to see through spatial (space) relationships. Perhaps, Colvin's definition as an ability to learn and adjust oneself to his environment seems a bit more impressive. We thus find intelligence being defined by some as general capacity to meet all situations as given by Stern, Patterson or Colvin, or as abilities in some specific areas, be it abstract as in the case of Terman or merely spatial as in the case of Wechsler. Thorndike would go to the other extreme denying its existence in any general field whatsoever, and would admit only special abilities in specific fields. According to him, any comparison of intelligence of a skilled combutor, an expert mechanist, and a clever artist is impossible, for they have shown their abilities in various specific fields. Spearman would try to find a via media by admitting a general or common factor, which means an ability to meet difficulties of all sorts whatever they may be, as well as a specific factor which means skills in several areas. Modern educators would, perhaps, improve upon this idea by admitting that these specific skills again have two or more subdivisions. Abilities of a similar nature may be considered partly linked together and partly peculiar and isolated. They, would like to introduce group factors in intelligence and intro-

duce what is known as the hierarchical theory of Parry, Vernon and Burt.

In the midst of so many conflicting definitions, perhaps it will be better if we try to find certain common qualities that are associated with the term intelligence. In the first place, it is a dynamic quality, namely, a capacity to act. This action of course may not be visible in the shape of performance. It may be confined entirely in the realm of thinking, but is nevertheless directed to solve a difficulty, or to remove a certain obstruction. Secondly, it seems to be an innate capacity. Environment can develop it, or make latent intelligence manifest, but environment can not produce intelligence within the person. Thirdly, though it helps us to accumulate knowledge, it should not be confused with knowledge itself. A person who has amassed a lot of knowledge may not necessarily be intelligent, he may not be able to adjust himself in a definite and novel situation, though perhaps the knowledge amassed may help him to find out a way some time. Fourthly, it should not be confused with such talents like memory or mechanical skill for both these can be improved with practice, while intelligence is unaffected by practice. Lastly, though intelligence is one of the attributes of personality, yet there seems to be some distinction between what we call personality and what we call intelligence. Personality, has a distinct physical component. We can at the first sight pick out a person with a fine personality, and though with our later acquaintance we may not find him so attractive, yet our first favourable impression about him does not entirely die out. Personality, moreover, measures motivation, feelings, emotions, attitudes or interests, besides intelligence which merely measures efficiency or reactions.

Where is the seat of intelligence is again a point of controversy. Psychologists of the last century held brain as the seat of intelligence and considered the size of the brain as a measure of intelligence. When it was however found out that eminent writers like Anatole France, a Noble Prize winner had a remarkably small size of brain, this theory was disproved. Modern psychologists have also failed to trace to what extent is quickness of reaction connected with intelligence. While skilled mechanists have generally a short reaction time, it has been seen that a clever artist or sometimes a novel writer has a remarkable slow reaction time, and takes more time to press the button, when the bulb is lighted in a Reaction Time Apparatus.

Moreover, the rate of increase in the Reaction Time seems to be much more rapid than the so called decline in intelligence, even when the intelligence is measured in the field of performance.

We have already discussed that the modern theory of Parry, Vernon and Brown would place intelligence in four distinct levels. At the base there is the strong undercurrent of General Intelligence which helps us to adjust ourselves into any new situation. Also are found major groups of abilities: Linguistic (verbal), Quantitative (numerical), Ability to see space relationship (Spatial) and Ability to act (kinesthetic). Each of these abilities in turn may be subdivided into minor groups branching off into several specific capacities. While we have so far considered intelligence from a structural point of view, we may as well try to see it from a functional point of view also as Thorndike has done. He has found three major components of intelligence namely:—

1. An abstract capacity which helps us to deal with symbols, no matter whether these symbols refer to language or to quantities.
2. Concrete capacity which helps us to deal with space relationships, as well as the ability to perform.
3. Social capacity which helps us to deal with our social environment and gives us the ability to mix with other people. Shy and introvert persons, if they are otherwise intelligent, will naturally give a good account of themselves in the first and in the second component, but will not perhaps do so well in the third. People who seem to impress us at the first sight and fail to impress us on closer acquaintance have probably the third capacity while their first two components may be sadly lacking.

Measurement of Intelligence: Binet's Test:

As we have already discussed in our introductory chapter, Binet was faced with the task of grouping children who had the same acquired ability, but were endowed with different capacities. They were all illiterates but when a literacy campaign was started they proceeded at different rates, and it was an administrative necessity to group them so that each group would consist of persons having approximately the same abilities. He developed a test which did not require any linguistic ability beyond understanding and giving response, to solve. At first the test that was evolved in 1905, measured intelligence according to the number of correct answers, a person gave. This would perhaps solve the

problem of granting persons who all sought admission to one class. Later as the scheme developed, persons came seeking admission to a higher class directly. The handicap of literacy alone should not debar a person to do so, for an intelligent person would be able to make up this deficiency in no time, and it is so unfair to waste the time of a person of superior intelligence by putting him into a lower class. But how to find whether the claims put forward by an applicant for a higher class on the basis of superior intellect? This can be done if we can devise tests suited to several stages of mental development. This Binet did by dividing his questions according to grades or mental ages in 1908. Very soon a method was found to compare the intelligence of persons of different ages by devising what is known as Intelligence Quotient or I.Q. In this we divide a person's mental age, as revealed by his answers given to intelligence test questions, by his real or chronological age, and multiply the result by hundred.

Stated symbolically it is $I.Q. = \frac{M.A.}{C.A.} \times 100$.

Before applying a certain test to a group of persons and pronouncing the mental ages of each individual there in, we must first ascertain that our verdict of their mental ages is correct. We must be sure and be able to say with a degree of certainty that the several mental age groups into which the test has been divided are really correct after all. This we can do, provided we get what the normal response of persons should be. We hold that normally persons should reply according to their actual ages (provided we work with a large number of children of each age group), for a subnormal person the I.Q. will be low. We can, therefore, put out test questions to a large number of children of each group (which does not include exceptionally bright or dull children otherwise), and see whether their responses are according to our expectations. Any question which is not replied by a large number of students in a certain age group should be taken out of that group, and used in the next higher group to see if it is suitable there or not. This process is known as the Standardisation of the Test.

Binet's original test was meant for French students. Its English counterpart was attempted both in England and in USA. In USA the work done was more remarkable. Terman went through an elaborate process of standardisation and modification, and ultimately developed two versions of the test. The advantage of the two versions is obvious. We may apply one

version and get the results, then we may apply the second version and test for ourselves howfar the results are confirmed. We thus find out the reliability of the test itself as a suitable measure for intelligence. Each of the series, *L* and *M* contains 129 questions divided into mental age groups as follows :—

(a) Six questions for each half-yearly periods from 2 to 4½ years. This is done because the development at this period is more rapid than at a later age. A correct answer naturally adds the mental age by a month at this stage.

(b) Six questions each for yearly periods from 5-14, a correct answer at this stage gives a credit for two months.

(c) Eight questions suited to average adult where credit for a correct answer is still two months.

(d) Six questions for each of the three groups called by him as superior adults I, II and III. The credit for a correct answer for superior adults I and II is four months, the credit for a correct answer in superior adult III is five months. The longer period provided in higher age is backed by the theory that the growth of intelligence slows down as age advances.

The remaining 7 questions are given as alternatives in different age groups. When a person answers all the questions, his mental age will be 22 years and 10 months, at which age growth of intelligence (as measured by the test) stops.

A question may arise as to what will happen to a person, say 46 years old, answering all questions correctly. Evidently he can not do anything better than scoring a mental age upto 22 years and 10 months. If his achievement divided by his chronological age and multiplied by 100 were taken, it will not be above 50. Evidently, he is being penalised for his age. To avoid this, Terman proposed a modification of the real or chronological age. Upto the age of thirteen he would not differentiate between the actual age and what is called chronological age. But he would not allow the chronological age to proceed beyond 180 months (which a person would reach on completing not fifteen but sixteen years). Between thirteen and sixteen he would take only two thirds of the actual age. Thus a person between thirteen and sixteen will have for his chronological age, his actual age upto thirteen plus two-thirds of the difference between thirteen and sixteen. At sixteen, it thus becomes 186 months (age in months for thirteen) plus 24 months or two thirds the difference between thirteen and sixteen. The maximum intelligence quotient for an adult with a mental age of 22 years and 10 months and

chronological age of 180 months is 151.6 *i.e.* 152. For a person of actual age below sixteen and registering a chronological age below 180, it is possible to go even higher, and it has been reported in 1953 that a very sharp American child has shown an I.Q. of 209.

For administration of the test, Terman would not ask the experimenter to put all the questions to every child. He would make a rough guess of what the mental age of the child is likely to be (for mental age above eight, perhaps administration in vocabulary item of the test may be helpful, for answers in that test would indicate the rough mental age). He would then put to the child all the questions set for age. If the child is able to answer all the question, he will be given the questions suited to the next higher age. Otherwise he will be given the questions suited to the next lower age. In this way, the basal age or the highest age upto which the child is able to answer all the question will be determined. The credit in years and months suited to the basal age will be given to him to start with. Then he will begin answering questions from those mental age groups where his answers will be only in parts of each mental age group. For each answer he will be given the credit for the corresponding months (one, two, four or five as the case may be) till he comes to an age where he is unable to answer a single question. At this, the administration of the test will stop. His total credit in mental age will be the basal age plus the sum of monthly credits he has earned. The mental age so obtained, when divided by the chronological age (actual age upto thirteen, corrected age between thirteen and sixteen, and 180 months for age beyond sixteen as the case may be) and multiplied by 100 will give the person's intelligence Quotient.

Terman found with a very wide administration of his test that intelligence of different age groups is more or less normally distributed. Roughly about two thirds of the entire group was found to have an intelligence quotient somewhere between 85 and 119. For convenience however, he took the demarcation lines at points 110, 120 and 140 on the right side of the normal line and at points 90, 80, 70, and 60 on the left (normal line being 100, which represents the points where mental and chronological ages are equal). Terman found that about 60% of the people are distributed between 90 and 110 and this is according to him

the score of persons of average intelligence. Between 110 and 120 on one side and between 80 and 90 on the other, there are about thirteen percent each. The former he will call high, average, or super normal, and the latter long, average or subnormal. Between 120 and 140 are 6.75% cases whom Terman will call superior, and beyond 140 are rare persons. About 0.25% of these he will call genius. On the other side, between 60 to 80 there are about 60% cases who may be called dull or morones, and below 60 are the remaining 1% who are idiots or imbeciles. Thus the test not only measures intelligence, but can be used for clinical diagnosis of morones and imbeciles. Mental abnormalities like neurosis and psychosis cause a regression. Such persons though physically mature, behave like children. They thus register an abnormally low mental age, and this fact added to other clinical observations would support the findings that they are of abnormal mind.

There have been various adaptations of this test in India notably by Sohan Lal at Allahabad, Kamath in Bombay and recently in Calcutta University. They are thus available in at least four Indian languages, Hindi, Gujarati (Marhati and Bengali). But these seem to have been standardised on a limited population, and perhaps are not yet complete for all age groups with two parallel forms as in the case of Terman. The application of Terman's Test in India, however, has its limitation, not only because of the language handicap, (which gives an additional advantage to a person whose command over the English language is better) but because of its cultural saturation. If an ordinary village boy is not able to recognise a spoon, it is not because his intelligence is low, but because he has not seen it in an Indian household. Sohan Lal's adaptation may be all right for U.P. but may not suit other parts of India.

Point Scale Group Tests :

Binet Test or its Terman Revision, is an individual test in which each person is tested separately. Though it allows a certain amount of flexibility, yet it is very time-consuming and expensive. To prevent this, certain group tests like Army Alpha have been evolved as this can be administered to large groups. These contain several items in each group. For instance a group may contain some true and false items and the subjects may find out which of them are true and which false. Another group may contain several plausible answers out of which the

subjects may be asked the one best suited. A third group may need a rearrangement of items, a fourth group may need simple mathematical computation and so on. For each correct answer a score may be given, and suitable corrections may be made to avoid guess work (the formula for this is scoring equals, right response minus the quotient obtained when wrong response is divided by the number of choices reduced by one). The test resembles an objective test with the difference, that it measures intelligence rather than attainments, and that it has been standardised. During standardisation when the test items have been verified as suitable, it is again given to a number of persons belonging to several age groups, and the score for such each age-group is obtained. These scores are then distributed over a hundred point scale, separately for each age group. This provides us with a suitable measuring stick with which we can assess any individual ability, according to the performance of the individual in terms of the accomplishment of the normal persons of his own age group. A person's score corresponding to sixty points in the scale of performance of his own group means that fifty-nine persons of his age group selected at random will get points lower than what he has scored in the test. His rating or percentile rank will then be sixty. This is known as the point scale and it is an average. A person gets a percentile rank of 50 instead of 100 in the age scale.

Semi-performance scales : Wechsler Bellevue Test :

Wechsler has evolved in the Bellevue University a combined test of eleven groups of items, six of which (Nos. 1, 2, 3, 4, 5 and 11) are of the verbal type and may be applied to the literates and the other five of the performance type which are applicable both to the literates and illiterates. Both the categories have been standardised separately as well as together. In fact, Wechsler's aim at evolving the test seems to be two fold.

He wanted to find out objectively whether ability known as verbal intelligence is interrelated to abilities of the performance type of activities. If the correlations are high, it will prove that either would measure intelligence correctly, and since verbal type needs some linguistic attainments, performance score would be the most general measures of intelligence, and it would thus justify Wechsler's definition of intelligence.

He wanted to find out further scale by which adult intelligence could be measured. Binet's Test or its Terman Revision

can register mental age only upto 22 years and 10 months. What happens afterwards? Does the adult intelligence remain stationary or does it decline is the pertinent question one may ask and this Wechsler has tried to answer.

The Bellevue scale of intelligence is somewhat in between the Terman's (or Binet's) conception of intelligence quotient based on the consideration of mental ages, and the point scale of finding a percentile rank of a person's achievement compared with his own age group. Wechsler would first get the score by administering the entire test to his subjects (ages between 10 and 50) and for convenience of marking will allot points for a correct answer which will generally be one rarely upto three (as in block tests). He will also allow time credit for quick and successful answers given before time and this will also be upto three in case of exceptionally quick and correct answers. Now some of the groups contain easier items and some harder, their weight in predicting intelligence can not therefore be considered same. Wechsler would, therefore, give added value to certain items according to their importance in predicting intelligence, and reduce the values of others. Thus the weighted score for intelligence will be calculated.

The weighted scores of an individual are then compared with the achievements of the person's own age group to find out his position according to a method which resembles the point scale.

But Wechsler does not write his answers on a simple point scale. He takes up Binet's conception of intelligence and holds that median intelligence should be rated at 100. He however holds that normally fifty out of every hundred persons should be showing the average intelligence (as opposed to Terman's 60%), and these should be between the scores 90 and 110. Wechsler thus takes 100 as the mean and 90 and 110 as plus and minus P.E. distances according to statistical concepts. Since the entire distribution is practically covered between plus and minus 5.5 P.E. distance on either side of the median, Wechsler has his intelligence range from 45 to 155. Thus Bellevue scale resembles the point scale with the adjustment that it is distributed over 110 points (from 45 to 155) and that it is distributed over 110 points (from 45 to 155) and that the median line is not 50 but 100. It has the advantage of reading intelligence in terms of his own concept of IQ.

Wechsler has found a fair degree of interrelationship

between the performance and verbal intelligence, and his scale is able to measure intelligence in terms of I.Q. (his own concept of it) for all age groups from 10 to 50 years. It has the disadvantage, like Binet's test in being individual and its administration is both expensive and time consuming.

Other Intelligence Tests :

The tests of intelligence of a simpler type are those of Maze learning or Draw a Person Test. These measure spatial relationship or only one aspect of intelligence. Hon's block measures both spatial relationship and ability to perform. Pegboard judges only performance, but Seguin's formboard measures spatial relationships as exhibited by patterns and performance ability. These tests thus measure only one or at best two aspects of what we call intelligence.

More complicated type of performance tests has been evolved like army beta test which like Army Alpha is a group performance test. In India, at the Psychological Bureau, Allahabad we have evolved Bhatia's Battery which is an adaptation of several tests including Block test, Alexander's Passalong test and others. This has been standardised and can be used as a performance test suitable under Indian conditions.

One great objection that is often raised against these tests are that they are not entirely culture-free. They give some additional advantage to the groups whose socio-cultural background represents that of the test maker. Even in case of performance tests like Wechsler Bellevue it may be said that omission of a band in the hat will be noticed by such communities where hat is a familiar object. If an Indian villager is unable to notice the omission, one can not say that his intelligence is lacking. It merely suggests that he has not come across the object often enough to remember all its details. Instances like this may be multiplied from a number of tests and some critics have indeed asserted that the very idea of test construction is to provide a justification for the higher socio-economic group to obtain more favourable treatment in the matter of educational arrangement for their children. This is perhaps a rather uncharitable remark to make against test maker. The cultural saturation is always acting as a strong undercurrent which we may not always be conscious of and this sometimes influences us in constructing a test.

It must be noted, however, that to meet this objection some

culture-free tests have been evolved. Where the cultural saturation is not entirely eliminated, it is at least perceptibly reduced. International group mental test of Dodd is a pictorial test which prepares according to common culture of human beings, and is prepared in co-operation with the anthropologists. It includes Code Substitution, Block Counting, Maze Tracing, series of Completion and Arrangement of Items. International Performances Test is another which has recently been revised in 1948. It eliminates instruction altogether. Each test begins with a few easy tasks to be performed which are self-educative. Among the tasks included are matching of identical colours, block design, foot print recognition, spatial relations, classification of animals etc. Tests are arranged in year level from 2 to 18. Cattell's culture-free tests are available at three age levels, Scale I for 4-8, II for 8-12 and III for higher ages (upto Terman's Superior Adults).

Raven's Progressive Matrices Tests have been designed to measure the 'g' (General Intelligence) factor of intelligence. It consists of sixty matrices or abstract designs from each of which a part has been omitted. The subject chooses the missing part from six or eight given alternatives. The items are grouped into five series each of which consists of twelve matrices of increasing difficulty but similar in principle. The earlier series require chiefly accuracy of discrimination, the later includes analogies permutation, alteration of pattern and other logical relations. The scoring is done on a point scale and Raven has worked out percentile norms for all ages 5-14 in half yearly intervals and then from 20 to 65 in five year intervals. Remedi testing it in Argentina has found it to be applicable to Argentine cultures. But Green working in Ceylon has found that it is not entirely culture free, though favouring certain professions rather than others. Mat-weavers of Ceylon who work with patterns got better scores than college graduates. Recently, an easier and coloured version of Raven's test suitable for 5-11 years have been made both in book and in board form. The subject is to choose the right piece rather than choose the correct completion. Its ceiling value seems to be low for even children of average ability score high percentile points in India.

Summary:

Like many other terms, though we all seem to know what is intelligence, we can not define intelligence in a way that may be acceptable to all. Different psychologists have tried perhaps to

measure the different aspects of intelligence and have emphasised one aspect overlooking others. We can not deny that one shows the average in his performance or actions even when he is confronted with difficulties of a different nature. This points to a general ability in intelligence. But one cannot at the same time overlook that while some people are clever in verbal responses, others are equally clever in number responses. Spatial relationships may not show themselves so well in verbal responses. This points to the intelligence being somewhat specific, running into some groups. We can not at the same time deny that in addition to group ability some persons show remarkable cleverness at some specific area of either verbal, spatial, number or performance aspect. Thus we have to consider intelligence to be consisting of several factors or levels, general, group and specific.

Measurement of intelligence is necessary, for administrative reasons, to group children or adults of the same intelligence together so that they may be given instruction together. This is possible provided one can devise suitable tests. Such tests may be either individual with the advantage of flexibility and adjustment to fatigue or boredom of the subject, or in groups with the same time. They may again be devised along on age scale where questions are divided as suitable to different age groups and the successful answer gives the subject a credit in years or in months. This finally settles the Mental Age of the subject, and when we divide this with the subjects real or chronological age, we can get a measure by which we are able to compare the intelligence of persons of different ages. We may have to adjust the real age suitable for higher ages, so that older persons may not be penalised for their age. As the age scale provides not one but several tests, it is also called a 'battery type test'. Besides an age scale there is a point scale in which the same test is given to all subjects. The test may contain several groups of items, but their administration is common to all groups. The test of this type is thus an 'Omnibus' pattern. Here the performances of normal persons of several age group must be collected and spread over a hundred point scale. To fix up the position of a new persons, all that we have to do is to compare his performance with others of his own age group and to find out where he stands on a hundred point scale. Evidently more intelligent persons would stand high in the list and less intelligent ones will be low down in the scale.

While Binet's test or its Terman and Merrill Revision, measures verbal intelligence along an age scale, Army Alpha measures it on a point scale. The former is an individual and the latter a group test. Wechsler Bellevue Test is a semi-performance test measuring both verbal and performance types but either part can be used separately or both together. The fact that two parts correlate well, proves some connection between, verbal intelligence and an intelligence of the performance type. Wechsler has devised a scale in measuring intelligence according to the performance of a subject being compared to his own age group, but he makes adjustments by taking probable error value to bring it to a form similar to Intelligence Quotient of Binet.

There are many other tests of intelligence which have been devised, some of which like the Form Board, Maze Learning, Draw a Person Test or Peg Board Test, measure one limited aspect of intelligence. Others have been so constructed as to give objective measurements of intelligence in any cultural pattern. Among the latter, may be mentioned the names of Dodd's International Group Mental Tests, Leiter's international Performance Test (Devised in Battery Pattern), Catell's Culture Free Test and Raven's Progressive Matrices. While reducing the influence of culture, it can not, however, be said with certainty that they are entirely culture-free.

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EXERCISES

1. Discuss critically Spearman's Theory of Intelligence (Two factors). What concept of Intelligence appears to you to be most suitable?
2. Define Intelligence. Discuss the aim and scope of Binet's Intelligence Tests.

3. Describe two performance tests suitable for students and discuss how far they help us in determining I.Q. or in measuring intelligence along a point scale.
4. Distinguish between Age Scale and Point Scale of measurement. What are the special features of Bellevue Scale?
5. Discuss in detail the same performance test devised by Wechsler, indicate its application in clinical diagnosis. How do his test results justify his way of defining intelligence?
6. Write short notes on :—
 - (a) I.Q. and its constancy, (b) Battery and Omnibus Test. (c) Culture-free Tests and their limitations. (d) Group tests and Individual tests. Tests.

CHAPTER XII

EXERCISE AND METHODS OF LEARNING

We all seem to know what constitutes learning, *i.e.* acquisition of new facts, and a controversy may arise about its scientific definition, as all are not agreed as to what learning constitutes and the manner in which one may learn.

Associationists' conception :

Associationists believe that when a new experience is brought about, the mind tries to locate its similarity with some thing familiar, something it has seen or known before and then to associate or connect the new fact with that old experience. This method, according to associationists, produces certain economy for instead of remembering so many isolated experiences one has to remember only few bundles of connected experience whose connections are based on certain similarity or association. While disconnected items of knowledge may be too numerous to create confusion, when grouped in a certain order they are like bundles of books arranged in a self, and can be really recalled when needed.

According to associationists, therefore, learning takes place when the mind is able to see the relationship between the new knowledge and the old. It is only when association of the new knowledge with the old has taken place that learning is possible. Some associationists will go one step further. They would find in this mechanism not only better learning for the new items of information, but a better definition of the older one. When a new boy enters the class, we try to recall his similarity with some person whom we have seen before. In doing so, we shall at the same time notice the points of dissimilarity, and this improves our knowledge of the old and familiar things also making them better defined. This is thus a process by which new things become known, and old things also get better known and is known as the process of apperception.

Associations can be changed. They may be accidental, logical and systematic. Supposing I go to Delhi on a wet day when it is raining hard. My impressions of Delhi will always be associated with the rains, and perhaps my impression of Delhi will be that it is a wet place. As a matter of fact, this is merely accidental,

Delhi has more dry days in the year than wet and the rainfall is not at all heavy. Yet because of the mere accident of my going there on a wet day, my association of Delhi will be with a wet place like any Akayab or Moulmain in Burma where there are very few dry days. My impressions will always be biased and wrong due to this accidental association. Many of our associations are likewise biased and clouded, because of this factor of chance playing an important role in it.

But all our associations are fortunately not accidental. Often we reason out connections and find out relationship. When we compare the climate of Central Chili with that of the regions round the Mediterranean Sea, because of wet winters and dry summers, because of the summers being not too warm and winters not too cold, because of the fruits grown in both, we are really finding out logical relationships. Perhaps in this case if we remember two things together, our learning them together is more meaningful. According to associationists, therefore, learning is more perfect to the degree as the associations are natural and more meaningful.

Behaviourists' conception :

The group of psychologists who place more reliance on the behaviour that a living being displays when placed in a new situation are called behaviourists. Unlike the associationist who looks into the problem from the subject matter point of view, a behaviourist places more reliance on the responses, on the attempts made by the learner himself. When a new situation confronts a living being, it is natural that he will try to react to it. So long as these reactions are disorganised and random, so long as they do not always lead to desired ends, no learning takes place. Learning, according to the behaviourists, is the organised response that is conditioned or practised by the learner. They would further find out a reason why a learner practises. It is because the response helps in the adjustment of the learner to his environment. The behaviourists will draw some distinction between automatic responses like the reflex action of closing one's eyelid when somebody snaps his finger before the learner, and responses that are chosen and organised. Automatic responses are not learnt and they show very little improvement, if at all of practice, as they involve no organisation. Some psychologists would go one step further, and say that the slight extent to which some of the automatic responses are improved by practice

shows the slight degree of organisation that is involved in them. The watering of our mouth at the name of a delicious food is different from the closing of the eye lid. Here the accumulation of saliva is of course an innate and automatic response, because it helps the digestive process. But surely it should have come only when the food reaches the mouth, and at the sight of the food when the mouth waters. It shows a little organisation namely an impression of the taste gets associated or combined with the visual impression of the object. Hearing the name involves a further organisation for the name stands for the thing. Now the learner has organised for or connected (conditioned) his response in such a manner that the mention of the name brings out the needed response of assimilation of the thing.

From this the behaviourists have brought forward the famous conditioned response theory. We owe it to the classical experiment of Pavlov. This Russian Psychologist had trained his dog in a peculiar way. Every day exactly sixty seconds after the ringing of a bell he would serve the dog with a dish of meat. One day, after many days of repeated practice, he did not bring the meat and observed the reaction of the dog on the sound of the bell. He found that as soon as the bell was rung, the dog became somewhat alert, but his mouth did not begin to water then. It was just sixty second after the sound of the bell that the dog's mouth watered, as if it was expecting its food then. This he found that the dog has connected or conditioned its response to two stimuli with which the object of its interest, the food, was connected. It knew that the sound of the bell had something to do with it and therefore, learnt to be alert. But it knew that time interval of sixty seconds, for then and then only the appropriate response, the watering of the mouth was visible.

The followers of the Conditioned Response Theory hold that learning in its fundamental form is essentially a modification of all natural responses, and their transference to artificial stimuli. In this particular case of Pavlov Experiment, the natural response of the accumulation of saliva, was connected not with the arrival of food, but with the artificial stimuli, namely with the sound of the bell, and the time interval of sixty seconds.

Being a physiological theory, conditioned response at once commends itself to those who want an objective but at the same time a physiological basis of the process of learning. According to this theory, then a natural response may be modi-

fied by bracketting it with an artificial response and they together form a certain action which, because it appears more or less automatic, may be called a reflex. Ordinarily, the response is simultaneous, as in the case of watering of the mouth at the very name of the delicious food, but sometimes we may so arrange the situation as in the case of ringing of the bell sixty seconds before the serving of the food. Here because of the time interval which has been inevitably followed, we find the response is consequently delayed. It does not occur at the mere ringing of the bell. This is clearly the case of a delayed response.

Followers of this theory hold that condition often takes place in our childhood and though the natural causes are forgotten, the effects or the response patterns still remain. Childhood fears are thus results of conditioned response, fears for certain harmless animal like spiders and cockroaches often shown by adults appear to be meaningless. We may remember them as the results of conditioning of certain childhood experiences which themselves have been forgotten. Perhaps these 'meaningless' fears' display a meaning of their own. What has thus been done by accident can be done deliberately by an educator. If the educator wants a desirable type of responses, all he must do is to condition or arrange appropriate situations. The child will then respond in the way we desire him to respond. By repeated practice this response will be so conditioned that the response becomes apparently automatic. Learning thus becomes the process of habit in which the role of the learner is not very different from the role of the 'dumb driven cattle'. It is the educator, the teacher, who has to do all planning and arranging of situations in order to get a type of response that he desires. His task again is to arrange for repeated practice so that the response becomes ingrained.

The theory, no doubt, gives a plausible account of conditions of specific learning, particularly, in those situations which involve a certain amount of emotional response. It, however, fails to explain the cases of complex thought processes.

Thorndike's laws :

Thorndike also bases this conception of learning on the stimulus response theory, but he would add two more factors or requisities to the mere practice effect that brings about learning as the followers of conditioned reflex theory would hold. Thorndike would try to look into the reason why a certain living

being becomes ready to receive the stimulus at all and why he would act. The subject would be ready to receive the stimulus only when such response brings a certain amount of pleasure. Satisfaction is, therefore, the first and foremost condition of learning, for without it no individual will react to the stimulus at all. Happiness thus forms the motive force and the origin of this happiness lies in the fact that the individual finds that by his response he gets the result which gives him pleasure.

Then the stimulus and the response should belong to one another, it is only when there is a natural connection between the way of acting and the result aimed at, that an individual is motivated to repeat or carry on the process and learn.

Besides these two fundamental facts, Thorndike would add one more condition to the very practice. The more recent has been the practice the greater would be the learning effect.

The first solution of an adjustment according to Thorndike takes place in simple trial and error process. A rat kept inside a box which has a hole in it, will jump at random to get out. It is by mere accident that he hits upon the particularly favourable place from where he may get out again if he jumps. If he is taken into the box again, perhaps he will need fewer attempts to hit at the right place and finally as soon as he is out into the box, he comes to the right spot wherefrom he can make a successful attempt to escape.

Analysing the situation, we find the rat's first attempt has been a process of mere trial and error, he tried several places, in many he had erred and finally he came to the right spot from where he could jump successfully. This gave him the freedom, which is a pleasurable sensation, and hence, the next time when the rat is put into the box he was motivated to try the process. If gradually he eliminates his unnecessary and unsuccessful jumps, it is because he finds a connection between the action namely jump, and the attainment of his goal namely freedom. This connection naturally involves a selection of the site, and this both the practice and the pleasure sensation of freedom provides for him. Further, if time elapses it is likely that the rat would forget the thing he learnt, and would have to repeat the process with unnecessary jumps (perhaps he may not have to make as many useless responses as the first, but that is due to a different thing which we shall discuss later) before he hits into the right spot again.

Thus Thorndike would impose four conditions for learning and provided that the learning to be effective should depend on certain laws which are as follows:—

1. Law of Frequency: the more frequent is the practice, the greater will be the learning effect. In this Thorndike does not differ from the followers of the Conditioned Reflex Theory who also believe that it is practice that makes one perfect.
2. The law of effect: the situation should motivate the practice and the greater would be the chance of learning. Thorndike would thus take away the right of determining which situations and stimuli are to be selected from the educators as the followers of Conditioned Response Theory would give the choice of action to the learner. This places a greater responsibility on the educator, for he has to select not only desirable but desired situations.
3. The Law of Recency: the more recent is the practice the greater would be the chance of learning. In this Thorndike has stated a thing which the followers of the Conditioned Reflex Theory might have implied but have never expressed. Any way, there is no variation in two theories with respect to this.
4. Law of Belongingness: In order to motivate practice further, both the stimulus and the response must be connected or belong to one another. In this too, Thorndike merely completes what the followers of Conditioned Reflex Theory have left unsaid. Surely the response in order to be conditioned, must belong or be connected with the stimulus. But the connection has not been clearly stated in so many words as a necessary requirement for learning, by the followers of the Conditioned Reflex Theory.

Gestalt View of Learning :

Gestalt psychologists like Kohler and Koffka held that all mental phenomena have a certain structure or pattern. The standpoint of the associationists had been to assume that individual items stand apart from each other, but this is not the case. A gestalt psychologist does not look to isolated items, he looks to the total pattern of configuration. When we are looking at a certain individual or an individual object, we are not unmindful of the total panorama in which that individual or the object happens to exist for the time being. Perhaps we are for the moment paying a greater attention to the particular individual. Yet the background effect that the total panorama produces can

not be overlooked. Ideas do not come to us in isolation. They are really parts of a total pattern or context by virtue of which they acquire a certain meaning and significance. According to this theory, when we learn a poem, we do not learn the individual words or lines of the poem, but try to read the poem as a whole (or at least a complete and significant portion of it which we may call a unit). This forms a complete unit of thought. If we happen to forget a particular line or stanza, the prompter just supplies the catchword and at once the whole chain of subsequent thoughts flashes back into our mind. Why is it that supply of a single word helps us to recall an entire stanza? The followers of Gestalt School of Thought would say that it is because the whole chain of words that form the stanza is so intimately connected, the learning of the particular catch word has been so well knit with this chain, that supply of the catch word helps us to call back into the mind the entire situation. The word in the midst of the chain of words, is in the stanza.

Gestalt School of psychologists object to the formulation or the problem of learning as implied by the four laws of Thorndike. Thorndike's basic position has been to find the connection between the stimulus and the response. These laws assure that for independent stimuli there are independent units of behaviour. Followers of the Gestalt do not believe in such isolated units. When we look at a certain scene, we have already organised our response to the total situation. What we call perception or learning, according to the followers of the Gestalts is the discovery of the relationships that exists between the elements on which we focus or concentrate our attention. Learning is thus not a building up of a wall by piling up of bricks. It is the excavation of a huge mound to trace the hidden treasure. Gestalt theory assumes that learning takes place in a total situation and not piece meal. In order to learn a poem it is easier to take the entire piece provided it is of a reasonable length than to take it line by line or stanza by stanza. In case of longer poems also it is desirable to take one complete and meaningful unit of thought which may serve as the focal reference point. Learning does not take place from the part to the whole, but rather from the whole to the part.

Dewey's conception of learning:

According to John Dewey and his followers, learning is possible only when the individual feels a need for it. All learning

according to him is purposeful and is taking place in the direction in which the purpose is being fulfilled. Ordinarily we do not observe how many cracks a wall has got, unless we are interested in its repair or are afraid of the wall collapsing. In both these situations however we are likely to observe minutely and when we do so, learning takes place. Dewey further assumes that when learning is taking place, an individual is participating in the situation as a single undivided organism. When we are playing, we are certainly interested in winning the game. We thus have an interest which motivates our action. Our entire organism, the body and the mind, are engaged together in this activity. It is in this type of situation where direct participation is possible, that maximum learning is taking place and this Dewey would call primary learning.

Dewey, however, admits that there is scope for a different type of learning in certain situations where direct participation of the individual is not possible. Facts of remote past or of distant lands can not be given in any other way except through a certain amount of communication. But whenever such communication is taking place, the actual learning that takes place is not much unless some opportunity of participation is provided by means of make believe enactments or through a rehearsal of the situation or at least by a direct connection established with a particular primary learning area. There is yet a third type of learning which may be the result of drawing inferences or conclusions from a topic learnt. But here the situation should be made problematic and the individual must feel the need for the problem solving himself.

Thus like Thorndike, Dewey believes in the law of readiness inasmuch as he recognises the need for motivation in learning situations. Dewey however places more reliance on the cause of motivation rather than on the effect. The goal must be worthwhile but pleasure would lie in the pursuit rather than on the attainment. The urge for pursuit, he feels, would come only when there is felt need. He would further agree with Thorndike in the idea of belongingness. The situation should be meaningful, the pursuit takes place in the direction of attainment. Both the goal and the significance of the effort in the direction of reaching the goal must be clear in the mind of the learner.

Like Kohler and Koffka, Dewey feels that learning does not take place by mere blind repetition or by thoughtless trial and error. He would modify Thorndike's law of exercise to the extent

that exercise and repetition at each instance must be purposeful. Each renewed effort must be caused in such situations where there is a fresh motivation created in fulfilling one's need. Each exercise must be both purposeful and meaningful. One can not moreover learn in piecemeal. It is possible that we may concentrate on one aspect of the total process rather than another, but the background of the total situation is ever present. Experience can not be subdivided into narrow compartments, it may be that for the time being one aspect secures greater attention, but real learning is taking place by the reaction of the organism as an individual whole, not subdivided into so many faculties reacting against the total situations. There are of course certain focal points, but these are taken by the learner as mere means to overcome the barrier as a whole.

Summary:

Opinion seems to be divided regarding the process through which a living organism tries to learn and gain better control over its surroundings. What it learns becomes the store for better effort and ensures an economy in future encounters reducing the random effort which are noticeable in early efforts. Association shows that there is a certain economy if the new things learnt can be properly connected with a thing learnt in the past. It is only when the old and new get connected or associated that not only things get better placed but perhaps our ideas about the old things become clearer. The followers of this theory held that such association, may be quite accidental or deliberately planned and organised. They would, however, place more reliance on deliberate associations.

One school of behaviourist would place more reliance on Conditioned Response or that they call Condition-Reflex Theory. Learning, according to them, takes place by repetition of process, when the connections between stimulus and response become ingrained. The followers of this theory would place all the responsibility for arranging the suitable situation and evoking desired response on the teacher or educator. It is for him to organise such situations and repeat the process so that learning may take place.

Thorndike, while admitting that sometime learning takes place by blind repetition or mere trial and error, would at the same time say that such trials are ingrained because of the pleasure sensation they ensue. Thorndike believes in the utility

of repetition or exercise like the other behaviourists but would add to it the Law of Readiness or Effect. The outcome of learning situations should give some degree of satisfaction or pleasure. He would further add two more laws. Law of Recency and law of belongingness. By the former he takes commensense view that the practice must be recently done, things learnt in the remote periods may be lost to the individual and by the latter he holds that the goal and the effort must be clear before the learner.

Kohler, Kofka and other followers of the Gestalt School feel that learning does not take place from parts to whole but rather from the whole to the part. Learning is not a building up process like piling up of bricks of information. It is an insight that comes into the mind of the learner to discover the relationships that exists between the particular parts of the situation for which the total situation stands as background.

Dewey's view of learning takes some thing from Thorndike and some thing from the Gestalt School. He also feels the need for belongingness and pleasure sensation. But according to him, the source of pleasure is not the attainment of the goal but really the effort. The individual must feel that his pursuit is worthwhile. This is possible only when the individual is conscious of the need for learning or exertion. He also agrees with the Gestalt schools in considering the total pattern or background to which the individual learner acts as a single undivided being. But while an individual is interested in the total situation, he may yet select certain focal points for attacks. It is like soldiers trying to capture a fort. The interest lies in the capture of the whole fort, but at a particular time it may be concentrated on breaching a particular point of the rampart. This will however be done so long as the particular focal point is connected with the main objective. Dewey makes a distinction between three types of learning one in which direct participation is possible. This is called primary learning situations which provide opportunity for Gestalt learning. But he admits that when direct participation is not possible, there is room for communication as well as for drawing inferences and conclusions. These are secondary and primary learning situations and the degree of success possible in such situations depends on the degree to which they can be made primary learning situations in which direct learning is possible.

Perhaps it may be profitable at this stage to look into a neat summary of the learning process that Dashiell has prepared to study the different conditions of learning, so as to make our study objective:—

1. The subject must be motivated. We can take an example from a simple experiment of maze learning of a rat. If we keep the food inside a maze and lead a rat through it to secure the food, he will not go and seek the food unless the rat is hungry. A well-fed rat may fall asleep at the door of the maze. It is only the hungry rat that explores and eventually finds his way. Dashiell thus agrees with Dewey that learning takes place in meaningful situations.

2. There must be some obstruction or barrier of some sort without which no learning takes place. In the above instance, if the food is supplied at the very entrance of the maze, where is the opportunity for instance of the rat to learn? We thus find that through automatic action there is no learning. There must be difficulty and this difficulty must be felt as this alone provides a motive force.

3. In every learning situation, the first movements are random and varied. This is seen not only in animal experiments but in such complex situations as when one is learning to drive a car. Trial and error is thus the most fundamental process. These are gradually organised into definite patterns of behaviour.

4. Successful responses come mostly by chance. In learning by trial and error, or by conditioning perhaps the subject can not predict the results. In one, he hits accidentally and in the other he is made to do certain action at the dictation of another person. Hence in both these situations, the benefit of gaining an insight through the chance situation is perhaps lost. When however the subject is conscious and alert, perhaps he will find a new meaning to the chance occurrence and this is called insight.

5. It is the effect that determines how an individual would select or fix the right responses. When a certain activity leads to a desired goal, the attainment brings some satisfaction and connection between the effort made for its attainment and goal itself are meaningful that learning takes place. Better motivation is perhaps possible when each repetition of the process brings some added satisfaction.

6. Learning may come rapidly or it may take a long time. When the insight occurs, there is a sudden improvement, with

trial and error and with conditioning there is progress no doubt, but the progress is slow.

7. Since learning depends on sense perception, loss or defect of any sense means an improvement of knowledge in that direction. The common assumption that the blind hears better or the deaf sees better is not borne by facts. True it is that there is some compensation, but in its totality, the loss is greater than the slight gain.

8. Any fatigue, whether muscular or mental retards learning. Overexertion must, therefore, be prevented and the physical conditions of ventilation or illumination must be satisfactory to provide freedom from physical fatigue.

9. Frequent practice given repeatedly is better than one long and continuous practice. It is better to repeat the process for ten minutes a day than to have one practice of two hours once in six days. This is, however, conditioned by the fact that such practice should be in the complete units that is to be learnt at a time.

10. Age and maturity must be taken into account also. Two experiments on identical twins is a good instance of this. Two identical twins are made to climb a few steps. The practice for the first was begun in the forty sixth week, but for other it was delayed till the child was fifty two weeks old. When the second child began its practice, it was seen that the first had already acquired some practice. In the 53rd week the first child could climb first steps in twenty six seconds while the second took forty-five seconds to do so. Seven weeks later both the children took the same time. Thus though the second child had only eight weeks practice, yet it was equal to the former's fourteen week practice simply, because the former began when it was still immature.

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EXERCISE

1. Discuss briefly Gestalt view on learning. Do you think his views offer a satisfactory explanation for all aspects of learning?
2. What is the role of motivation in learning? How do Dewey and Thorndike differ in the source of motivation and to what extent is there an agreement among them?
3. How will you apply the principles of learning in :
 - (a) Your own studies.
 - (b) Your teaching any subject in School.
4. Define Learning. Discuss the role of incentives in relation to learning.
5. Discuss the various theories of learning.
6. Write short notes on :—
 - (a) Maturation and learning.
 - (b) Conditioned Reflex and its effects on learning.
 - (c) Role of Practice in learning.

CHAPTER XIII

TRANSFER OF TRAINING

Development of the Faculty Theory :

The field of learning is vast and if we want learning to be really useful, we shall certainly wish that whatever power or faculty has been developed through the learning situation in one field should be useful in as many fields as possible. If the school teaches a boy to be honest, it certainly does not like to limit the exercise of that quality only inside the examination hall, for instance. The boy should be honest in every walk of life, whether he works as a cashier in a firm or as a judge in a court. If the training given in school situations is not applicable in life situations also, certainly it should be considered insufficient and ineffective.

Thus a certain amount of transfer is not only desirable but is necessary. Perhaps from this arose the connection of the subject matter of a particular study and the specific powers that study develops apart from the contents it gives. We all are familiar with the fact that study of certain subjects makes us better prepared for studying a few other subjects. A little grounding in mathematics is necessary to understand the principles of physical optics, or statistics. The question arises whether beyond this utility in allied fields of study there is any general power developed by the study of a particular subject?

The idea that the study of certain subjects confers on the learner certain specific powers is as old as Plato. It was Plato who said that Arithmetic sharpens wit and Geometry increases the power of apprehension or general understanding of a situation. In other words, a study of Arithmetic not only makes a person better able to compute (calculate) quantitative proportions, but it has an additional use making a person witty. Likewise, Geometry in addition to its powers to distinguish shapes has also the power of making a student understand or grasp any situation. Bacon, when he advised a person to study Mathematics to cure the habit of loss of concentration and to study logic when one is not able to differentiate, took the same view as Plato did.

John Locke formulated the theory in a logical manner and propounded what is known to day as the Transfer Theory. Locke supposed that the study of certain subjects can develop certain

faculties like memory, reasoning power or judgement. Study of Mathematics, it was supposed, developed the reasoning power. Study of a classical subject is likewise helpful to train our imaginative powers. Other curricular subjects in a like manner were considered by him helpful to develop other faculties.

When this theory was pursued, it was felt that since the development of the faculty was the real goal, the subject matter or content of a particular study was considered to be less important. The process of learning was considered to be more important than the content. Training of a particular subject was therefore, not an end by itself, but rather a mere means to an end. Naturally then what was being taught was of little significance by itself. Whether the subject matter was of any practical value, whether it was connected with life or not, became matters of very little consideration. Further since it was thought desirable to develop certain faculties, such consideration as to whether the pupil liked the study was of minor importance. The powers have to be developed and the pupil's mind has to be properly disciplined so that such powers can develop. If the pupil likes the study, well and good, otherwise the study is to be forced into the child. Thus the faculty theory developed the theory of Formal Discipline.

Many modern educators feel that this theory of Locke has set back the wider interest of education in many ways:—

1. It has helped the retention of some of the less useful subjects in the curriculum. After the development of the modern European languages as a result of Renaissance, subjects like Latin had lost their practical utility in every-day life and would have perhaps been studied by few research workers. It was Locke's Faculty theory that justified their retention in the curriculum. As subjects for study they were no longer useful, having lost the utility of international communication and their place was taken by the modern language like English and French.

2. Though of great practical utility, the study of scientific subjects was delayed for a long time, simply because the educators could not agree what particular faculty of mind would their study develop. Even when they were eventually introduced in the curriculum they were taught in a formal and logical manner, more attention being paid to the method of teaching than the content, taught.

3. No effort was made to make the curriculum useful or interesting. Because of the supposed disciplinary value, they were just forced down into the minds of the pupils. Indeed, it was held in some quarters, that more uninteresting the study of subject was, the greater was its disciplinary value.

The present educators therefore do not follow this theory blindly.

Limited Transfer Theory :

As the studies in Social and Natural Sciences developed, it was clear that the study of these subjects were found to be vital to our every day life and as such they were considered to have certain intrinsic values of their own, apart from the supposed values of training of certain faculties.

About this time Psychology ceased to be a speculative subject and acquired an experimental character. It was natural that some psychologists would like to perform experiments and ascertain objectively whether any transfer takes place at all or not. Between 1890 and 1928, as many as ninety-nine experiments have been performed in a recognised manner, on the problem of transfer of training to see whether training given in one situation could be effectively transferred into another situation. James performed experiments on memory. A group of subjects was asked to memorise a certain thing, while, another group containing pupils of equal ability were left free. After a time both the groups were asked to memorise another thing, say another poem. Now if the first group would show better efficiency, one may conclude that their earlier act of memorizing had been effective, otherwise the power of remembering had not been transferred from the first to the second situation. Others performed similar experiments on other learning abilities and by means of an experimental group which was made to learn something and by a control group which did not get a chance of learning, their learning ability in a new situation was tested. It was found that in 32 cases there was an evidence of considerable transfer. In 49 cases the transfer was just partial. In eight cases the transfer was so insignificant that it could be neglected and in five cases there was positive proof that no transfer had taken place. In the remaining five cases nothing could be predicted as to whether any transfer had taken place.

Thus briefly speaking, we may say that in two out of six cases there is a positive proof of appreciable transfer. In three

cases the transfer is only partial, while in one case either there is no transfer, or it is quite insignificant or otherwise uncertain. This simply points to the fact that transfer is, on the whole, possible only to a limited extent.

We may now analyse the conditions and find out which factors would decide whether a transfer would take place or not. When the situation is identical, either in the procedure or in the attitude, we find that a transfer is possible. Thorndike, for instance, found that when a person was made to learn two poems one after another, and these poems had same metre or conveyed a similar thought, then the effect of learning the first was conveyed into the second so that the second was learnt quickly. Judd found that practice in solving one kind of problems helps the learner to solve other kinds of problems so long as the basic situation of problem solving remains the same. When one is working on simultaneous equation in Algebra for instance, he will acquire some power over the problem solving of a different type of simultaneous equation (from age to digit say) but only so long as the number of unknown things remain two. He will need additional practice for working three unknowns. Certain features of problem solving however, namely, how to analyse the data, how to form a tentative hypothesis, and how to test the given hypothesis remain the same and it is on account of this that we do find that even in a new type of problem, one who has solved problems of any kind has a certain advantage.

Insight into a configuration (shape) or general perception of patterns is a power which can happily be transferred. So are good habits of work; neatness and orderliness. But these are only partially transferred.

Criticism of the Partial Transfer Theory:

Even this theory of limited transfer is not free from criticism. Many psychologists hold Thorndike's identical element theory does not really show or prove that there has been a transfer. When the elements are identical, what has happened is merely repeated exercise, and it is agreed on all sides that repeated exercise helps retention and that learning is re-inforced by practice. The so called 'new situation' is merely a recapitulation of the old element. As an example if a boy has learnt the English word 'Devolve' and he next learns the Latin root 'Volva' i.e. to roll, he is not learning really a new word but transferring the power acquired from his knowledge in English.

He is really practising the basic elements of English word, for a second time, and when this additional practice is given there is some gain.

They likewise find fault with Judd's experiments, and show that a student clear in solving algebraic problems does not show the same cleverness in solving a problem in Economics. There is no general ability of problem solving. They are merely specific fields, and in each field larger the number of problems solved, the greater is the practice and quicker gets the speed for solving future problems.

Kohler working with apes found that the more intelligent ones solved their problems of food procurement when confronted with certain obstructions, by a sudden insight. He contends that the content of the total situation or configuration is subconsciously visualised by the ape all the while he is trying to concentrate on a specific aspect of the situation that is presented to him in a problematic form. Apparently, the ape was idle; but really he was actively engaged in measuring the total situation in general and he managed to succeed in his attempt at solving the specific aspect, as a matter of course. An experiment was performed by him with four hens, three apes and a child, each of whom had to procure the food from a box. In each case he kept the food inside a box which we may call 'B' and which appeared to be somewhat lightly coloured than another box 'A' which did not contain any food. After a number of practices each of the subjects learnt how to procure food from the box 'A' and the experimenter by altering the position of the boxes made this recognition well established. Then he quietly changed the box A and replaced it by another 'C' which happened to be more brightly coloured than the box 'D'. It was found that the all subjects invariably tried to find the food in box 'C' and not in the box B. This clearly shows that the subjects did not recognise the box B at all, what they did is to learn that the food was in the brighter one of the two boxes. So long as B remained the brighter of the two, there was no difficulty. The moment A was changed, their learning was wrong. Food was still inside the box B, but it now happened to be the darker of the two now. This experiment thus shows that with a change in the situation, learning becomes useless. Thus transfer from one field to another is not possible. Learning and perception takes place in relation to the whole field of experience and the entire field situation can not be repeated *in toto*.

Our Present Theory

Today we seem to doubt the very theory of identical elements put forward by Thorndike, as two fields can not be entirely identical. But whatever identity there exists would certainly provide us with an opportunity to practise and as a result of this, the performance certainly gets quicker. Thus apparently the old law of exercise is being repeated in another form. Even in such cases, where it has been claimed that the ability acquired in one situation partially helps a learner in another. Modern experimental evidence shows that there has been no real transfer. Similarity of two situations gave the learner some advantage by affording him a chance of practice.

If, however, the subject matter be adopted to the intellectual level of the learner, a certain amount of insight and meaning of the relations seems to get clear. This simply, implies a broadening and generalising the zone of perception, and is not really a case for transfer. As, however, a new situation is interpreted in the light of past experiences of a similar situation, it is clear that a past experience gives a new meaning to the situation and facilitates our successful encounter with the new situation. This too we can explain without assuming the theory of transfer.

It is, however, found that certain routine habits formed by mechanical practice may persist or may be recalled for use. It is thus a case of recall of identical elements or added opportunity for practice. In language study for instance, grammar and spelling form the routine habit which can be taken from one situation and be used in a similar situation. Certain desirable attitudes, dispositions, methods of attack, ideals of accuracy, neatness and social values like honesty may be inculcated generally, and are capable of wide applications as the likely situations when they will be needed are very similar.

Summary :

Need for wider application of desirable habits taught in school in life situations is generally felt. This at first gave birth to the faulty faculty theory, started by Plato but followed by Locke. The defect of this theory had been found in the retention of useless subjects in the curriculum and utter neglect both of the content of the curriculum and of the children's natural urges. With the rise of social and natural sciences it was found that contents of courses had a certain value.

Researches in experimental psychology proved that we can not conclusively say that ability acquired in one situation is likely to be transferred in toto in another situation.

This gives rise to Thorndike's theory of limited transfer. This assumes that if situations are similar, some transfer of the traits acquired in one situation takes place. Experiments made by the Gestalt Psychologists like Kohler, however, shows that the individual does not remember an isolated experience, but the whole field, and since the whole field can not be recalled, there is really no effective transfer possible. Other educators criticise Thorndike's theory of limited transfer as superfluous, for after all, if two situations are identical, what is happening is not transfer, but merely an added practice, and it is the practice that offers facility in the solution of difficulty in the second situation. The problem that now arises is that if there is no transfer, wherein lies the significance of developing certain desirable school habits?

Perhaps without bothering about the mechanism, we do find that provided a certain thing has been learnt in a wider context, something, be it transfer or repeated practice, remains to be used in another situation. Modern educators, therefore, try to develop the desirable attitudes of the people and having done so, select as subject for instruction as are typical of life, offering greatest opportunities for enrichment of experience and practice of social virtues. The habit thus formed in the school environment will be useful in the social environment. In this case the school situation and the social situation become more or less identical. Thus basic conflicts or problems of life are really brought inside the school room for the child to solve. This, whether it is by providing opportunities for transfer or by giving added practice, would at any rate give him the power to meet the basic conflicts of real life situation. Thus to connect the school with life seems to be the net outcome of our study of the problem of transfer of training. It is thus really not a transfer of training, but training for transfer that we look to.

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EXERCISES

1. What is meant by transfer of training, in what conditions does it take place?
2. Criticise the Faculty Theory of Locke and point out the Educational defects brought about by it.
3. Discuss the problem of transfer of training with special reference to training of character.
4. Explain the technique of a typical experiment in transfer of training. What do you understand by the Transfer of training.
5. What is meant by training for transfer? Illustrate your answer with typical example.
6. Modern Psychologists though not believing in the theory of transfer of training, are yet agreed in its basic assumption that what is learnt in the school can be useful in life, provided the school condition resembles life. Life is thus brought into school and training taken out to life.—Discuss.

CHAPTER XIV

STUDY OF THE PUPIL AS AN INDIVIDUAL

Importance of Individual Study:

Whatever may be said about the gains of learning in general, we must evaluate it in terms of the gains of an individual pupil. If group teaching is compared with a dinner in which all should participate, the amount of food that is consumed, relished and assimilated depends on the particular individual.

Adams has rightly said that in order to teach John, Mathematics, a teacher must of course know the subject, Mathematics, and the methods of teaching it. But that alone will not do, he must also know the individual boy, John, who is being taught, his abilities and his limitations, his environment and his attainments, his attitude and his interests.

All our studies on growth whether physical or emotional and our studies on the development of social or moral aspects of personality has so far been more or less on general lines. In our studies of the learning process, transfer, remembering or forgetting, perception and thinking, imagery or imagination, we have considered pupils in general.

Perhaps in our evaluative techniques, viz. tests of intelligence, attainments or aptitudes, projective techniques and personality inventories, we have seen that within an age group, and certainly within the attainment group, pupils differ. But perhaps these have merely touched the problem of individual study on the surface, without trying to find the why of things.

The individual, we must remember, is conditioned not only by the circumstances of his growth and development; he has his personal limitations also. Perhaps our findings by means of evaluative techniques may not always be reliable or valid. Most of these are foreign tests and are suitable for the culture patterns found in the land where they have been standardised. Indian tests like those of Kamath or Sohan Lal or of Bhatia have of course been standardised under Indian conditions, but Indian condition in itself consists of several cross-cultural patterns running together. The limited population on which these tests have been standardised does not certainly take into account all these

cross cultural patterns. Moreover, the linguistic barriers have limited the suitability of the test into one that can be used all over the great land.

Some people hold that under the circumstances, perhaps we may be better advised to rely on scores of the foreign tests, for we may get scores somewhat lower than what is obtained there. Still they may be useful to give us values of relative merit. These values however would have been valid, if the last administrations were uniform. As it is, the knowledge of the language, gives a decided advantage in using a foreign test and Binet test and other tests, when used in India become tests not of intelligence but more or less of knowledge of English. Perhaps we can avoid this by translating these tests into various Indian languages. But these would be meaningful only when the situations are similar. Acquaintance with British or American ways of life will raise the scores of picture Arrangement and picture Completion items of Wechsler Bellevue test, for instance. It is perhaps difficult to evolve a vocabulary test of similar difficulty gradation as has been done for different languages of India. In tests like Army Alpha or Army Beta, in many of the attitude tests and personality Inventories likewise, it is feared that certain groups adapted to a westernised way of life will get scores completely different from the groups which are not so adopted. Our results in these cases will not show individual difference and individual standings, but cross cultural difference of the groups.

We must further remember that these tests assume individuals to be ever static. The Intelligence quotient, it is assumed never changes nor do the attitudes or personality traits. Personality is a fixed attribute the tests seem to hold. But teaching and learning are dynamic processes and education is after all a matter of growth. The subject matter and the techniques of teaching have their values only in terms of rapport or understanding of pupils by the teacher and the undersanding of the teacher by his pupils. A teacher may be teaching before a class, but the gain that an individual student gets, depends on the extent to which his personality is being moulded or modified by the impact of the personality of the teacher (and partly by the impact of the personality of his co-sharers), by the extent of his ability and opportunity of sharing in the activity.

Every successful teacher tries to know all his pupils thoroughly or at least as many of his pupils as he possibly can. Indeed some teachers feel, and rightly so, that more effective work

is being done when he is not "teaching" but trying to learn more about his pupils, when he is trying to get more news about a particular child. The odd moments that he is spending on child to find out his hobbies or his interests, or to know about his home conditions, or when he is giving individual help to a particularly backward child are often more effective than the hours he spends in the routine activities of class.

How should a teacher understand his pupils :

In order to understand a pupil, it is important that a teacher should not express his own feelings of interference. Even if some bits of information about the family conditions or the past history of the pupil appear to him as shocking or revolting, he should refrain from expressing his views. Perhaps he may find that a particular child has come from a broken home where the parents have separated. The child is already ashamed of this circumstance and by the teacher's expression of contempt, the only result would be an addition of the child's embarrassment. What a boy needs immediately is rehabilitation in the larger society of the group life of the class. The longer he is being denied of this, the greater is the gravity of the problem. This the teacher can arrange for him with sympathy and tact. In all such cases the teacher should try to understand his problems better. He should further remember that all pupils do not have the same standard of values as the teachers. If children coming from slums where they had been denied healthy recreational activities are somewhat aggressive, perhaps it is natural and their aggressiveness is to be slowly and gradually rounded off in a group life. Generally, it will be found that if the child comes from a group different from that to which the teacher himself belongs, the values will differ considerably. The child behaves in the same way as he has seen the elders of his group behaving. It is not something strange to find a child coming from slums suddenly whipping out a knife on the slightest provocation, though it may be shocking for persons of other groups. It may be revolting to the refined taste of the teacher bred in the puritanic traditions of a cultured middle class. But it is nothing strange in the slums, where life and limbs are so cheap. Perhaps we as individuals, take the values and customs of our own group for granted. We forget that there may be a difference in the social setting of the pupils, or of some of them, and our own social setting. It is only when a teacher makes a positive effort at understanding as many of his pupils as

he can, that he will gradually learn to take things in the right perspectives.

Perhaps a teacher will do well to remember that in trying to understand his pupils, he is not a judge, but is in fact a learner trying to understand the individual child. A clumsy and overgrown boy may be so self-conscious that he may be afraid to open his mouth before the class, lest he may speak out something that may be quite foolish. Perhaps he has developed this shyness as a result of being laughed at in the past. If the teacher studies him, and gives him the reassurance that he badly needs, perhaps this handicap may be overcome and the pupil will be able to take his place in the normal social life of the class. Those who stammer, those who are left-handed or are otherwise handicapped, need similar reassurance which a teacher can give. But a teacher can give such reassurance when he studies or understands the child, and that he can do only when he studies the pupil as an individual.

Information regarding the student may be secured in many ways. Often while writing an essay or answering a questionnaire, a student may display a certain mental attitude or otherwise give out unconsciously perhaps, some information about himself which may serve as a starting point of a further inquiry.

Perhaps the play interests of students may be watched to get some information about the boy's mental set up or about his early upbringing, since many of these interests had been developed while the boy had been playing in street concerns or at home. Boys' hobbies also give some valuable information about him because the type of hobbies one selects depends on the encouragement one receives from home, and also on the facilities otherwise available to the individual.

Understanding of pupils needs a co-operative effort. In the first place it demands the cooperation of the pupil himself. Unless the pupil is going to give some information, how can the teacher get all the data on which he can build his course of guidance? Perhaps a little may come out of his unconscious or unguarded revelation. But this can at best serve as the starting point. Perhaps many boys and particularly girls would be too shy to give out any adverse information about their family conditions. This is more true in case of families affected with poverty or the rupture of his parents. A boy will not also give much information about his friends either. But if the teacher is patient and sympathetic, if he is able to gain the

pupil's confidence and respect, if the pupil feels that the teacher can keep a secret, he will slowly find out all the information he needed. Of course, the boy or the girl must feel that what the teacher is seeking to find out is not prompted by idle curiosity but has arisen out of a genuine desire to help the child thereby. In the second place, the understanding of the pupils needs co-operation of the parents. It is perhaps more difficult to get this here in India than in the West because of the following reasons:—

1. Teachers do not have so much spare time to go and visit parents. The pay given to the teachers compel them to take up other remunerative occupations outside school hours and this makes their available free time too limited.
 2. Because of the poor pay he draws, the teacher does not enjoy the honour and confidence that is due to him. When he meets the parents, the parents may suspect that by this he is trying to secure a tuition, a suspicion on his bonafide which no self-respecting teacher would like to bear.
 3. Social barriers of caste and class, if not of religions, prevent free mixing of teachers and parents and a shabbily dressed teacher would hesitate to enter the drawing room of a rich parent. A poor parent living in a hut would likewise feel embarrassed on the visit of a teacher. If castes differ, a teacher can neither demand nor get even a glass of water when he is thirsty.
 4. Male teachers will find it difficult, if not embarrassing to get information from the mothers of the boys, and lady teachers will find it equally difficult to visit houses of many of their pupils on account of social restrictions.
 5. Indian parents have yet to realise the importance of collection of such data. They would feel shy of giving out personal information, being afraid of their disclosure and would not certainly give a correct account of their financial position if it is not quite satisfactory.
- In spite of these drawbacks, the collection of such data from the parents would be certainly useful, and teachers should try to secure whatever data may be available however incomplete that may be. It may be that by this we are just laying the foundation stone of a healthy procedure. The first stages of such procedure are bound to be not only laborious, but some time they give us results which may not be quite assuring, being so inadequate.

In the third place, the collection of data would need the co-operation of other teachers. A single teacher observes only one aspect of the child and his observations are necessarily incomplete. If he gets information from other teachers, who might have taught him in a lower class or who are teaching him in other subjects in the present class, he may get many available bits of information about the boy. There is, however, one difficulty in this procedure. The personal prejudice harboured against the boy by one teacher may be spread and a teacher who is seeking to get more information about an individual child should guard against this.

Besides these, the teacher should observe the child personally, to find out to what extent he has the power of exercising leadership and to what extent he has the power to adjust himself to the group life. His traits of originality, if any, should also be noted. Perhaps, these are not possible to do within the class room during day to day teaching, especially when such classes happen to be large. But an observant teacher may find out ways and means to observe a child both inside the class room and outside, in the play fields, and elsewhere, when he can get a fairly comprehensive picture of a particularly exceptional child in any way.

Anecdotal Records :

We may get enough information, if school keeps a separate file for each child, wherein any information likely to be useful or interesting about the pupil is noted. The file grows in bulk, the longer the student remains. It is possible that the records of one student may be more copious than of another. But the records, which become a sort of joint contribution of many teachers, will surely be useful for any pupil. The records may contain some information about his family conditions, about his friendly or hostile contacts with other pupils, about his chief behavioural problems, his hobbies and his examination results. The anecdotal records are thus more complete than cumulative records, for they not only give information about his achievements but also about his attitudes and perhaps, atleast in some cases, the history of his early upbringing also.

Like cumulative records of achievement, anecdotal records serve as safeguards against the highly subjective, piece-meal and haphazard individual impressions of teachers. A record is moreover carefully written and, therefore, when a person writes

something in a record he is apt to be more moderate in his expressions than what he is likely to be when he speaks it out. This seems to be an additional advantage of the records over the method of oral communication of the teachers. They should keep the record in a neat file. Several distinctive features of the records are given below:—

1. They contain an appraisal of the pupil's progress by several teachers and thus round off individual prejudice if any.

2. In an ordinary school test, we merely get the marks without getting any clues to the interest and potentialities. Achievement merely marks the level one has attained, it does not show what amount of effort he has to put in to reach that level.

3. Anecdotal records give a more complete picture of the social structure (caste or socioeconomic group), for they show to what extent are socioeconomic factors influencing the early friendships and rivalries among children. This information may prove valuable to any worker in social psychology.

4. The records may prove quite handy when reports to the parents are being sent, or when the principal talks with a parent regarding a child. The teacher may give a full picture of the boy with the help of these records. What he does, when he simply mentions, 'Conduct: Good', or 'The boy is helpful' is very superficial.

5. They may be used as reference books to teachers in their staff conferences or in conference with a school psychologist (if there be any) regarding the behavioural problems of children.

6. They become a sort of diary of the teachers' own activities. He may for instance, see whether his methods of inflicting punishments or offering praise is justified in the light of the future information available, say after a month or so. Perhaps it may help him to understand the boy better, and deal with him more effectively in future.

How much details should the record cover will naturally depend on the interest with which a teacher views a particular occurrence. Some events may be entered more casually than others. Children who are exceptional, are either unusually bright or dull. Those who have the gift of leadership, those who are unusually pugnacious (quarrelsome) or delinquent will naturally provide a more detailed information than others. Since these records maintained by a teacher are likely to bias a teacher using the record in a subsequent year, it is necessary that some

moderation should be used in the language in which the profile is being drawn. The very act of writing will of course have a good effect, but perhaps this amount of caution may again be given by the Headmaster at the beginning of each session to every teacher using such records.

Sociometric techniques :

Pupils appraisal of their own mates are also likely to be helpful. Sociometric techniques is one of such ways. They reveal the group structures. Each pupil is asked to rank all (in lower classes such groups must necessarily be small) other members of his group in various situations in order of reference. There may be directions as follows:—

1. Show in order of preference the persons with whom you would like to study jointly.

2. Show in order of preference the boy you would like as your partner in any game.

3. Show in order of preference the boy you would like to have as your companion in a field trip.

4. Show in order of preference the boy you would like to take as your partner in going to see pictures.

When pupils have signified their choice, the choice is likely to be distributed. Perhaps it may reveal religious or class distinctions. In such cases the information would be especially useful for a research worker in sociology. Ordinarily however, it will be an index of popularity, for the more popular student would be preferred by all, and the least popular disliked. The study will however reveal some valuable information, not only of the student preferred, but also of the student who is showing his preference, and may show interesting changes taking place in the choice of friends as one grows older. Ohio social acceptance scale gives the order of popularity in ranks, beginning with the most popular being ranked as first and the least popular as the last. Perhaps it will be better to convert the ranks into scores, so that the most popular student gets the highest score. Perhaps for each score points may be given and a person's popularity may be better evaluated by adding up the points scored.

Lincon Institute of Social Distance Scale arranges all members horizontally on the top of a wide sheet and a space is provided for each individual being ranked by every other on a five point

scale. These are: like much—5 points; like—4, cannot say—3, dislike moderately—2 points, and strongly dislike—1 point.

Sociometric techniques reveal many things:—

1. The factors and considerations on which popularity depends may be revealed.

2. Used with anecdotal records, they may reveal traits which are likely to be popular in different age groups.

3. They may reveal to what extent caste or social prestige influences the rating, and also the influence of such considerations at different age levels.

4. They may give information about the existence of cliques or groups within groups.

5. They may provide information about change of friendships, provided children are made to give periodic evaluations. Some pupils who were isolated and who remained at the bottom of the level at one time may on a later sociometric study be found to have changed.

Summary:

The two problems before a teacher or educator are to consider the group as a unit, and to rehabilitate each individual into the group life. At the same time one is not to forget the individual and be forgetful of the individual problems. Tests like those of intelligence, aptitude or interests as well as projective techniques show us that individuals differ considerably. Perhaps we may not be able to take the results given by foreign tests objectively, for they had been conducted under conditions completely different from ours. We have, therefore, to be content with subjective evaluations by the teachers themselves regarding children. For this it is necessary that teachers must have some objective information about pupils on which to base some conclusions. The objective information is possible only when pupils are studied as individuals.

Perhaps more information about pupils and their feelings, interests and attitudes are available, not during the teaching periods but while the pupils are engaged in play and other activities.

While making such observations, the teachers should remember that they are learners of human nature, and so one's own views and prejudices should not cloud their studies. One great danger lies in case of dealing with children of different social or economical or caste groups. As individuals, we have built up

certain sense of values for ourselves and we are prone to judge others according to the scale we have built for ourselves. In dealing with children of other groups however, we must remember that such children have built up their code of conduct from the adult behaviour. They have seen for themselves within their groups, and hence some of their conduct though they may appear so shocking and revolting to us may be natural for the groups they belong to. Perhaps we may like to cure them of such practices, but we must remember that we can cure only when we show a certain amount of understanding and sympathy.

In this method of studying and understanding the child, a teacher needs certainly the co-operation of the child himself, who can give him very valuable information which will not otherwise be available to him. This he will be ready to give only when he is able to rely on the teacher, when he finds the teachers sympathetic. The co-operation of parents is necessary for getting information about many traits and for finding out developmental history and family influences. In India, the teacher is at a disadvantage. In the first place he has very little time and he often hesitates to see the parents. They may misunderstand and in the second, the parents themselves are not so communicative. Information may, however, be secured from other teachers, but one must not be prejudiced by the coloured vision given by another teacher.

Perhaps anecdotal records giving complete information of a child regarding his family history, academic position, special traits of sociability qualities of leadership, any behavioural peculiarities if kept for each child for a number of years may prove helpful.

Sociometric techniques, by which children rate each other on the order of popularity or ability may be helpful also to get quite valuable information about the boy.

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EXERCISES

1. What is the importance of personaliyt study in the field of education?
2. What techniques should a teacher adopt for knowing his pupils?
3. How does a Cumulative Record serve the purpose of an Anecdotal Record?

CHAPTER XV

EVALUATIVE TECHNIQUES FOR APPRAISAL OF LEARNING AND ATTITUDES

How mental tests differ from examinations :

Mental tests are refined methods for assessing the abilities of students. We can of course assess the abilities by our personal judgments. But these are likely to be somewhat haphazard and crude, and may be coloured by most recent experiences. Tests and examinations are better, but in order to be both reliable and dependable, the yard stick with which we measure must be accurate. This can be ensured by standardisation of the test. Standardisation is possible by applying the test to a number of persons supposed to be normal (usually a large number of persons selected at random are likely to be normal) and recording their reactions. Those questions which are not answered by a large number of persons should be deleted. The language of the test should leave no room for misunderstanding, and the same instruction should be repeated on every administration.

Tests differ from examinations both in their structure and in their functions. Structurally while a test is standardised, an examination is not so. In fact, a great deal of precaution is taken to prevent early publication or leakage of the questions, and to put them to a group of persons to find out their suitability before application is unthinkable. Examinations as we usually see, are more or less of the essay type where fewer questions with longer answers (so that each answers assume the type of a small essay) are found, while tests are mostly of the objective type having a larger number of shorter answers where correction has been made more objective. Functionally, while a test is given for diagnostic purpose, usually to guide an individual by finding his mental condition or the extent of his knowledge, an examination is an administrative measure devised to select the students for a further higher course, or for a job.

Types of mental tests :

There are various types or mental tests devised to measure various mental attributes and functions. One type is devised to

test knowledge. These are known as attainment tests. An ordinary attainment test differs from an objective type of examination only in as much that while the questions of an objective type of examination are not standardised and kept secret before application for administrative reasons, the questions of an ordinary attainment test has been standardized and the evaluation is done in terms of responses received from the group of persons who are supposed to be normal. Attainment tests are naturally likely to be of many varieties depending on the subjects taught in the curriculum and on the grades or classes.

We have already discussed intelligence tests both of the verbal and performance type and these constitute the second type of mental tests. Aptitude tests are meant to find out the line of interests or more correctly the latent capacities of the pupils. Sometime the apparent interest manifested is misleading, it may be only a temporary one and it differs from real aptitude shown by a child. Aptitude tests are obviously more helpful for vocational and educational guidance and they will, therefore, again be referred to in the relevant chapters on guidance. Now some time we put in an aptitude test of an omnibus type and see how many lines are preferred by the child. This can be tested by Thurston's Primary Ability Test, which has questions on verbal reasoning, numerical ability, abstract reasoning, space relations, mechanical reasoning, clerical speed and accuracy and language usage. Perhaps from a test of this type we can at best find a general idea as our findings with a specific test in the special field. We have, therefore, to give tests of special aptitudes like tests of musical or artistic ability or for clerical or mechanical aptitude. Aptitudes tests should be distinguished from trade tests which measure the fitness for a particular calling while aptitude tests merely measure the ability to profit by training along a particular line.

Personality tests are usually in the form of inventories, where questions are put to a subject and definite responses like 'yes', 'no' or 'can not say' are expected. The test having been standardised by various application on a normal group, have responses already marked along a point scale. The person's responses are, therefore, measured on a percentile scale according to the responses given. Thurstone's Personality Schedule can thus find out the degree of neurosis or want of a person's adjustment under changed conditions. Benne's Self-sufficiency scale can find out to what extent is a person prone to be self centered. Laird's

Introversion and Extroversion Test will determine to what extent a person's sense of values is determined by external objective standard of judgement and to what extent does he depend on the internal and subjective standard. Allport's Ascendancy and Submission will similarly determine the extent to which a person tends to dominate in a social situation. Bernreuter has tried to combine all these features in a single omnibus type of test, where 125 questions are put and for each response whether, 'yes', 'no' or 'doubtful', there are different values attached while measuring these four different traits. These values have been calculated while applying the test to normal group of persons, adult men or women, college men or ladies, high school boys and girls for which separate forms or standard values are available. Flanagan has used the same test with of course different weightage for responses to measure two other traits, namely, sociability and confidence.

Manifest interests are tested by a test like Strong's Vocational Interest Blank which has also different values for each response as in Bernreuter's Personality Inventory. Perhaps in measuring interests, the test has not been so successful as the interests are of more temporary nature and less defined than aptitudes. Attitude tests have been devised to measure opinions, personal likes and dislikes. Thurstone's attitude scale is a standardised test, but generally attitudes are measured by questionnaires and the opinions of the subject are asked on a five point scale like 'strongly agree', 'agree', 'doubtful', 'do not agree' and 'strongly disagree'.

Projective techniques are mental tests of a different type forming a class by themselves. In the first place they are diagnostic and although they help to find some thing new about the subject, the result of the investigation is usually kept secret from the subject himself. This is because they are meant mainly for psycho-pathological diagnosis. In projective techniques, the most important feature is to allow the subject to have a free play of his imagination. This helps the experimenter to know in terms of the meaning attached to different objects, the projection or the emotional attachment bonds formed by the pictures of objects to the subject's imagination. The simplest projective technique is the Free Association Test. The subject is given a number of words, and is asked to react to these words. These words form the stimuli of associations or experiences to form in his mind. During the period these associations are being formed, the behaviour of the subject whether he blushes or

hesitate, coughs or laughs, whether he takes an unusually long time to answer are noted preferably by a system of code. Murstenburg has used this test to detect crime. If in the midst of so many innocent words a word associated with the particular crime is put, the subject will show an unconscious hesitation which can be detected either by his slow or faltering speech or by a rise of high blood pressure. The lie-decectors are also devised under the same principles for while telling a lie a person is likely to give himself away either by an apparent hesitation or by a rise in his blood pressure. More common Association test is that of Kent and Roshanoff which is devised to measure insanity or abnormality in terms of his singular responses. Perhaps we can also ask a person to draw some thing and from the nature of his drawing find out the course of his imagination. Rorschach test or Ink Blot test is a useful projective technique devised to measure the free play of a person's imagination. The subject is given ten cards with inkblots of different shapes put on each. In five of these cards the blots are only gray and black, in two sides red colour is used and in the remaining three, there is a variety of colours. As these inkblots have all their peculiar shapes, they will suggest different figures in the mind of different persons. From the nature of the responses, the course of free play of the imagination of persons can be judged. Thematic Apperception Test or TAT has 16 cards in which fifteen contain pictures showing some type of anxiety or some sort of special situations, and the last one is left blank. The subject is asked to make a story connected with the card according to what he imagines the situation to be. This provides him a chance to display his imagination freely and by the time he has made up fifteen stories, he would himself make up a completely original story for the sixteenth. Indian adaptation of the T.A.T. Test has been made by the psychological bureau at Allahabad. For very young children, a test like the Thematic Apperception Test may not be suitable as the situations displayed in the pictures are rather complex. A simpler test known as Children's Apperception test or C.A.T. has been devised in which animals are substituted for human beings and dislike for one of their parents, or for their brothers or sisters, which they would otherwise hide under normal situations is revealed.

One great limitation of these mental tests are that they are suitable for the cultural setting of the group or the country,

where they have been devised and their application in other situations need fresh standardisation.

Examinations :

Examinations are devised to find out whether pupils have or have not acquired the required ability. They also predict progress. We eliminate the students who are not likely to profit by a higher studies by holding the matriculation examination simply because we feel that success in answering question based on studies made at the school stage may forecast that for a college course as well. Matriculation thus tests not only the students' knowledge but also tests his preparation for a higher course. Employers also select candidates on the result of examinations not merely because such success displays their amount of knowledge tested, but also because the success displays the presence of certain desirable qualities like industry, perseverance, ability to organise (as he has organised facts in his answers) and calmness. Examinations are also used as indexes of teaching efficiency. We are apt to rate a school's standing in terms of its pass percentage. In an ordinary day to day work also, examination has an important role to play. It serves as a stimulus for the student to work, it makes the teacher see for himself how much of what he has taught has stayed in the minds of his pupils. It helps the teacher to diagnose the learning difficulties of an individual student or a group of students.

As against so many virtues, examinations have certain serious weaknesses. They dominate the entire curriculum, all the efforts of the students are directed towards picking out a few likely questions rather than gaining a thorough and systematic knowledge. Unfortunately, the efforts of teachers are sometimes misdirected and over-importance attached to the examinations, is a menace against real education. Reasoning ability of the students gets stunted, they simply collect a few likely bits of information and arrange them in the shape of plausible answers. They have no time to think for themselves and so hesitate to give their original opinions for fear of offending the examiners' pet views. This in course of time renders them incapable of exercising their individual judgment in any situation. The health of the student is often shattered on account of the strenuous preparation they have to undergo, and failures mean not only a loss of self-esteem, but such lowering of a person's

prestige before others that in India the number of suicides and attempted cases of suicides following the publication of results is increasing every year. No wonder therefore, some students are tempted to adopt unfair means partly because such means save them from calamities, partly because of the great fuss we make about the secrecy which excites the curiosity and awakens a spirit of bravado and adventure in some minds.

Besides these there are certain structural defects from which examinations suffer. The marking is subjective, each examiner marks according to his own standards and he has a large scope of variation in marks, often fifteen to twenty to award for a single answer. It is no wonder, therefore, that the same boy is likely to get different awards if his script is evaluated by different examiners. Starch and Elliot found in 1913 that on giving the same geometry paper to 116 examiners (care being taken that the marks are not entered on the margin but on separate sheets of paper as otherwise they would have suggestion effects, it was found that while two examiners gave as high as 90, two gave as low as 30 percent. Eighteen examiners gave between 80 to 90, and the same number gave 30 to 60. The remaining seventy six examiners gave between 60 to 80. This is found in a paper where the very nature of the subject should not allow much individual differences, and yet this wide difference is seen. In 1953 Hartog and Rhodes got three papers marked by seven different examiners. In each case, the same script got different awards from different persons, and that which was considered best by one was considered the worst by another. Thus examiners vary not only by some being strict and some lenient, but in their standards of selection of what is the best and what is the worst. This difference comes from the fact that different examiners place emphasis on different aspects of the answers. Some give more value to comprehension, others to accuracy of facts; some prefer clarity of expression, others feel that organisation or arrangement is more important. A few may place more importance on the language side like grammar and neatness, while some may emphasise a good handwriting. But it is also seen that the sense of values differs within the same individual, and what one has considered the best at one time may not be considered so good after some time. Hartog and Rhodes in 1932 gave fifteen scripts to be examined by fourteen different examiners. Their awards of course differed. Then he hid their

awards and nineteen months after in 1935 the same scripts were given to same examiners. It was found that the second awards did not tally with the first with respect to as many as thirteen of the examiners. Only one examiner had persisted in giving the same marks to every answer book as he had done before, others gave some answer books a higher mark than before and some a lower mark. Of course in some cases their awards were constant. There were generally as many as five to eight changes in each case and in as many as ninety-two cases, (total number of changes possible for thirteen examiners marking fifteen books being 195 or 47 percent cases there was a change). Evidently, the mood of the examiner had changed in the interval and some students are likely to gain and others likely to lose as a result of the change of the mood.

That the deviation is not always due to examiners and that the change is sometimes due to the students themselves changing their moods have been proved by Ballard who in 1923 asked twelve students to write the same essay after six months. These were examined by a panel of six examiners and only the average award was taken.

The fact that examinations can not always predict successfully the future ability was shown by Valentine and Emmet who found in 1932 that 40% of the Scholarship-holders did badly in the honours examination and only one-third of the successful honours graduates had equally bright high school records. This may be partly due to the fact that environmental factors of college education may prove stimulating to some and retarding to others, but it, nevertheless, casts a serious doubt on the efficiency of our predicting machinery.

Objective Tests:

Some of the defects of the essay-type examinations are avoided, if we use objective tests where a larger number of questions are put demanding shorter answers. The short answers have one advantage; they do not put the slower writers at a position of disadvantage, for they have less to write here. Each answer is either correct or wrong; the examiner has only two choices left, either to give full credit or nil. The marks allotted to each answer is usually one or two; this makes marking objective. The subjective evaluation of the individual examiners and a change of examiner does not mean a change in awards if the examination is objective.

As many questions are put, they cover a wider field of the year's work. The chance when only six or seven questions are being selected out of the whole year's work is thus avoided.

Questions can cover many fields. True and False Tests will have a pair of items, one true and the other false, the candidate will have to strike off the false item. In multiple choice tests five or six plausible answers are given for each question and the candidate is asked to choose the best or most plausible one among them. In Rearrangement Tests, the candidate arranges the given things in the second column so that the right item of the second column (that which corresponds best with the given item of the first) is put against each first item. In filling up of the Completion Test, the blanks are filled up by the most appropriate words. All the tests are, therefore, able to test various mental faculties like information, judgement and organization. Only one thing is left out, namely, the power to deal with more complex situations where sustained thoughts are required.

One great defect of these tests when used for examination purposes, is that because of the very nature of the purpose, they can not be standardised like other mental tests, for examination questions demand a certain amount of secrecy. Thus the yard stick for the measurement of the ability may be wrong. It may either be too easy or too difficult. It is still subjective. Pullies has complained that though the objective tests have eliminated the subjectivity from the marking level, yet it has retained it at the level of setting questions.

Other Evaluative Techniques :

- Interviews and oral examinations are also commonly adopted as evaluative techniques. They, however, suffer from several defects. In the first place they take a lot of time. To test hundred candidates orally allowing ten minutes per candidate would mean over sixteen hours. Secondly, since too many questions can not be asked from one candidate his mental ability can not be assessed properly. Only a small element of what he is supposed to know can be assessed. As the questions have to be changed, the standards are not uniform for all candidates. If all the candidates after replying are to be detained, and not allowed to mix with those who have yet to answer, the process is by no means easy. When a number of candidates are many and can not all be examined soon—the same questions may be repeated. Then the candidate asked earlier has an advantage, as the examiner himself

feel less bored. When the same answer in the same form is being repeated and his evaluation is still so subjective. From the candidates' point of view this produces a greater emotional strain than in other forms of tests, for he has literally to 'face' the examiner. It is moreover difficult for the examiner to maintain the same mood throughout the test, his very tone may sometimes unduly encourage or discourage some examinee. This type of test, gives several behavioural information, and is a useful device for assessment of mental traits and for clinical investigation, no doubt. But it generally fails as an administrative device for evaluation and should be, if used, supplemented with other methods of evaluation.

Teachers' ratings on a day to day work may be considered another useful device provided:—

1. Teachers maintain such records faithfully and do not make up one on demand, for in the latter case, they are bound to over-emphasise some more recent occurrence rather than give a total picture.
2. Teachers are free from personal likes and dislikes, their own prejudices etc. Unfortunately teachers may be unduly prejudiced in favour of a timid and submissive individual rather than an aggressive one who may display better ability.
3. Teachers are free from external pressure and do not give a higher award to the children of such parents who are influential. The danger of this is in a written record being maintained, but in a record of day to day work, a part of which will naturally be oral, there is a greater tendency of showing a partial behaviour.
4. Teachers are not tempted to lower their standards. In India where a large part of the expenses of the institution is covered by fees, and where fees depend on the enrolment, there is a danger that teachers in some schools may be tempted to lower their evaluation just to increase their enrolment and thus ensure financial security.

Perhaps cumulative records by a number of teachers on various subjects for a number of years will eliminate the issue of personal prejudice. Teachers are prone to discuss problems, of children in their staff room and a teacher taking a class is apt to be prejudiced against a particular student from the reports he receives from a

teacher who has handled the class earlier. Such reports, though they are otherwise useful in the matter of dealing with the student in question have at least a harmful effect on the assessment of his abilities. Other dangers as pointed out, however, remain and hence teachers' rating, if used in evaluation, needs being supplemented by other methods of assessment.

Summary:

Mental tests and examinations assess the ability of a student, but while the former is more concerned with the function of guidance the latter is an administrative measure designed to assess ability. The very nature of the administrative function demands a certain amount of secrecy for an examination. This prevents its prior standardization, necessarily makes examination somewhat unreliable for the purpose for which it is designed.

Mental tests designed to find out required knowledge are known as attainment tests which differ from so-called objective tests in as much as they are standardised. The like and dislikes of a student, and his ability to profit by a particular course may be assessed by what is known as aptitude tests which go somewhat deeper than merely assessing temporary interests and finding out innate capacity to profit by a particular course. Such tests may be of two types. One like Thurstone's Primary Ability test would merely indicate the broad line of the subject's aptitude and thus need be confirmed by the special aptitude tests of the line. Attitude tests can measure opinions and interest tests give more accurate information of his interest rather than of his aptitude, i.e. potential ability. Inventories are questions demanding a limited type of response each of which can be assessed in terms of findings already made from known persons. Personality-Inventories measure one trait of personality or many traits.

Projective techniques like Free Association Tests, Rorschach test by allowing a free play to the imagination, provide us many valuable sources of information which a subject would not otherwise reveal, and which the subject may not be quite conscious of. They are, therefore, meant for the guidance at the clinical level. All mental tests are, however, suitable for the cultural setting for which norms or standards have been found out, and when used for a group of different culture they need restandardisation and often considerable structural changes.

Examinations differ from mental tests in not being previously standardised. Various studies show that the types of examinations we are more familiar with, commonly known as Essay type examinations suffer from serious defects. Here the same candidate would get different marks from different examiners, that not only this difference may be uniformly strict or lenient, but sometimes the very order may be changed owing to a difference in the standards of emphasis of the different examiners. The same examiner may sometime give different marks to the same candidate on two occasions depending on his moods. Candidates may also give different answers on two occasions depending on their mood. Even in the function to predict future success, it has been found that examinations do not always serve as dependable guides.

Examinations have, however, some use in stimulating students' efforts and in giving the candidates an ability to select and to organise their efforts. As such, they should be used not merely for administrative reasons for selection and assessment provided they are not allowed to dominate the curriculum and reduce education to the position of mere assessment or examinations.

Objective tests structurally resemble attainment tests, but as they are not standardised and are used for assessment rather than guidance, they are functionally close to traditional type of examinations. Their advantage over the essay type examination is that they are able to cover a wider portion of the curriculum. The marks are more objective and a candidate is not likely to suffer from the subjective mood involved in the persons marking, for the answers are either correct or incorrect. They are, however, able to test a limited amount of organisation, and unable to test complex organisation or sustained thoughts and are certainly unable to test the style of writing and literary abilities beyond a few bits of information or minor aspects of language study (when they are used for a language subject). They are free from subjectivity at the marking stage, but can not be entirely free from it at the question setting stage. All these make objective test a valuable supplement to Essay type tests but not a substitute for them.

Oral tests and interviews, though able to give some valuable information about the behaviour problem of a student which one is grappling with suffer from many defects the chief among which are, as follows:—(i) They are time-consuming, (ii) they cause emotional strain more severely than any other type of tests and

examinations and (iii) they are unable to maintain uniform standards as for all candidates the questions have to be changed. Besides, the amount of time that can be given to a particular candidate being necessarily limited, they are not able to fathom much of the candidate's ability and the examiner's mood while asking questions to a particular candidate may unduly influence the candidate's answer. This limits the utility of this device as a supplement to other rests only.

Teachers' records may be either haphazard or may otherwise show a certain amount of prejudice against a particular student. They are further liable of being distorted by pressure in favour of certain individual students or a general leniency may be shown. If they can be made free from these defects, they would be better guides for assessment, for if they can be faithfully kept they will give a better picture of the student's ability. Cumulative record maintained for a number of years is a better picture, but they merely minimise, but not completely eliminate the defects of the records maintained by a single teacher. Perhaps as a supplementary source of information, teachers' records may be used to reduce the hardships and influences of chance from which public examinations whether of essay type or of the objective type suffer.

All these point out that in order to evaluate a particular candidate we need adopt not only one but a combination of several techniques. To evaluate his personality in many phases, we need a number of standardised tests like tests of his intelligence, of his attitude, of his aptitude, an inventory of his personality and of his interests. Besides, the projective techniques. This will show how his personality is manifested in various areas.

Similarly, in assessing his amount of knowledge, we may give him standardised attainment test, as well as objective tests but supplement the same with an essay type test and oral interviews. Our assessment will, however, be incomplete unless we take into account the valuable information that the teacher can furnish of his day to day progress. Perhaps for this, we would depend not merely on the records supplied by a single teacher, but on the cumulative records supplied by a number of teachers.

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EXERCISES

1. Distinguish between subjective and objective types of tests in educational measurement. How does an objective test help teaching also.
2. If you have to give a projective test to a group of secondary school pupils, which test would you prefer? Why?
3. Assess the value of the following in child guidance : (a) School Records, (b) Interest inventories, (c) Aptitude test.
4. Oral Examinations can at best supplement other tests. They cannot be used as substitute for them. Discuss.
5. What are the merits and demerits of examinations.
6. Write short notes on (a) Achievement Test. (b) Cumulative Records. (c) Personality Inventory.

CHAPTER XVI

PERSONALITY AND PERSONALITY DEVELOPMENT

What is a Personality:

Personality like intelligence is a term which is commonly used but its exact definition is impossible. By personality we mean such characteristics by which a person can be distinguished from others. Generally we take notice of such persons who are able to attract our attention as something different from others. Consequently tall or short, intelligent or dull, agreeable or disagreeable are characteristics which are used to denote personality. Though at the first sight it is the physical characteristics that attract attention, it has been seen that in the long run the emotional characteristics count. Hippocrates, first divided all human beings into four characteristic groups according to their temperament as follows:—

- (a) Choleric or those who are easily excitable,
- (b) Emotionally feeble and pessimistic or Melancholic,
- (c) Emotionally insensitive or Phlegmatic, and
- (d) Persevering and optimistic or Sanguine.

According to Hippocrates, these personality differences were caused by certain liver secretions. They affect our emotional make up. Twenty three centuries after Hippocrates, William James in 1911 divided all human beings into two groups one prone to accept the established ideals whom he called rationalist and the other ready to test and verify things whom he called empiricist. In 1923 Carl Jung had also a two fold division but on a different basis. He called the first group extrovert and held that their standard of judgement and reaction was related to the external world and the other was introvert whose standards were related to the internal or their own mental world.

Allport tried to find personality traits under five broad divisions namely, Intelligence, Mobility, Temperament, Self Expression and Sociability. Each of these traits was subdivided into a number of subtraits. Allport's characteristics are really twenty-four as follows:—

Intelligence: (a) Capacity to remove obstacles, (b) Memory which is associated with learning, (c) Capacity to see interrelation-

ships, (d) Creative imagination and (e) Capacity to adjust to new situations.

Mobility: (a) Capacity for work, (b) Methods of working, (c) Perseverance and (d) General Ability.

Temperament: (a) Emotional strength, (b) Breadth or narrowness in the emotional field, (c) Capacity to control one's emotions, (d) Tendencies and (e) Treatment towards other persons.

Self Expression: (a) Capacity to start work, (b) Capacity for Insight, (c) Compensatory capacity and capacity to bear loss, (d) Extroversion or introversion, and (e) Aggressive or submissive attitude.

Sociability: (a) Social adjustment, (b) Capacity to share in social activities, (c) Self-centred or Self-evasive attitude and (d) Character.

While Allport's subdivisions are comprehensive, even if they are somewhat overlapping, its critics hold that the absence of and fixed standard for measurements will make allocations subjective and arbitrary.

Some Biological considerations in determining Personality :

Following Hippocrates, Earnest Kretschmer has divided all human beings into three biological types, not according to bile secretions but according to their physical structure, and has allotted definite emotional roles associated with each physical make up. These are as follows:—

(a) *Pyknics*, or short and stout built persons among which are found potential maniacs and aggressive persons in general.

(b) *Asthenics*, or tall and thin persons who are generally shy and withdrawing type and among which are found potential schizophrenic persons who suffer from split personality ordinarily talking to themselves.

(c) *Athlates*, or muscle-built.

Later researches have found many diversions from Kretschmer's divisions. Many have doubted particularly the fact that his findings of more manics among *Pyknics* and *Schizophrenics* among *Asthenics* are nothing remarkable in as much as persons tend to be stout and well-built and come under the *Pyknic* category in an older age and in early youth they are more *Asthenic*. As prevalence of schizophrenia is mostly in the youth and maniacs are generally found above forty, it is no wonder that he found

more maniacs among *Pyknics* and more schizophrenics among *Asthenics*.

In 1923, Gilbert attempted to divide personality in terms of alkaline secretions and held that aggressive tendencies are measured in terms of the quantity of alkaline secretion. Berman held that if the adrenal glands are overactive, one becomes peevish. If the front lobes of the pituitary glands are over active one becomes more masculine, while if the rear lobes are over active one gets effeminate. An overactive thyroid is more active and persevering. Rooss, Stagner and Young, however, doubt about Berman's findings stating that our knowledge about the endocrine glands is yet incomplete.

Alfred Adler has, however, deduced certain sociological conclusions. Having found that most of the criminals and delinquents have some physical defect or other, Adler traces the defect as the cause of their maladjustment not physically but sociologically. If all persons had defects, then there would be according to him, no tensions. As the handicapped persons suffer from an inferiority feeling or inferiority complex their behaviour changes after the tension is thus caused.

Freud's view in Personality Determination :

Freud has not denoted any definite personality type as such. But he has traced *Libido* as the basic urge set up by the unconscious tendencies within us excited by *Id*. It is sexually inclined. *Id* is controlled by *Ego* or the practical aspect of the self in a normal person. *Ego* is in its turn controlled by the *Super Ego* or the moral aspect of the self. *Super Ego*, according to Freud can not directly control the *Id*, but always through *Ego*. According to Freud, the personality structure is conditioned by the interaction of these forces from an early infancy. The *libido* of a newly born infant is conditioned to its own body, later it gets fixed with its mother. If the fixation and later transference is not normal, it gives an abnormal fixation which Freud has called *Oedipus situation*. With girls, similar fixation with the father is possible. With the development of age and intellect, the *libido* is transferred to other persons, at first with persons of the same and later with the opposite sex. According to Freud the urges of the *libido* are often running in opposite directions from the activities which are socially approved, and this creates conflicts which the *Ego* is not able to resolve and causes maladjusted personalities.

Freud's findings revolutionised the psychological approach to personalities and all persons do not agree with him. Terman had for instance found that instead of attachment to the parents of an opposite sex, boys get more emotionally attached to fathers and girls to mothers. It may further be said that in a joint family structure in an eastern home, where there are other relatives superior to the parents in a social hierarchy, the findings of Freud would need considerable modification.

Social Influences on Personality Developments :

Not only Adler, but a few other psychologists have doubted Freud's conclusions on personality development independent of social forces. Cooley first indicated the influence of the larger society, beyond the child's parents and siblings in determination of the personality. William Thomas studied some Polish families which have immigrated in U.S.A. and very soon displayed certain distinct behaviours from what they used to display at Poland. These were consequently the result of the impact of a new social environment. Perhaps, if the behaviours of the refugees from Hungary (after 1956) and of Eastern or Western Pakistan into different States of India far away from their home land are studied, we may find valuable information about change of personality traits by social environment. The change is, however, due to three forces, the influence of the older environment, the influence of the new and the influence of the circumstances under which the change has been made.

Anthropologists have found out how there are certain stereotyped racial characteristics found in every member of the race, conditioned no doubt by the expectations from each individual member of the society. Thus it has been found by Benedict that *Zuni Indians* of New Mexico, and by Margaret Mead that *Tchambulis* of New Guinea have more aggressive females and more timid males. The *Tharu* Indians of Jansar Bawar in U.P. show similar characteristics. All these are conditioned by the respective roles in those lands.

Cyril Burt in England and Eichhorn in Australia have found that most of the delinquents come from broken homes where one of the parents has been divorced or separated or from such homes where the parents are found to be always quarelling. As opposed to these findings, however, it has been found in U.P. that 80% criminals have come from well adjusted but rather poorer homes, and it may be said that in a joint family structure it is not

parents alone that determine the personality development. There are, however, certain tribes in India which were called 'criminal' tribes. They were found to supply the potential criminals. Investigations have found that these have well settled moral codes within their own group and their so called criminal tendencies are nothing but a sort of hostility to the larger group.

The environment of the school, in addition to home and immediate neighbourhood, no doubt exerts a considerable influence of the development of the child. Education, no doubt, influences the native tendencies of the child. It has been seen that students who have had some education tend to be broad minded. The contact with one's own age group coming from different families and bringing different family training and traits does also help in developing the personality. Then we must not forget the tendency of hero-worship inherent in an adolescent, which will change the personality traits of the children. An ideal teacher can influence the growth of proper personality. This can easily be seen by comparing children from a good school with that from a bad school. And it is seen that a good family rearing as well as education in a good school are both conducive to a well integrated personality.

Summary:

Human society was concerned with what constitutes a personality from a long time. Since physical appearance attracts notice, it was studied first of all, but we find that from the time of Greek civilisation we have not been indifferent to emotional components of the personality. There is some definite similarity between what Hippocrates has said about bile secretions and what some of the psychologists say about the secretion of endocrine glands. But our knowledge, then and now, has been incomplete to establish a definite relation between these secretions and development of personality traits. Kretschmer has tried to connect personality traits with body built, but perhaps in this context the explanation given by Alder seems to be more convincing. It is the idea of a social superiority or otherwise that determines these traits. In other words, it is not the traits but their uniqueness in one's group that develops the traits.

Freud has studied the development of personality in terms of the fixation of *libido* and the adjustment of *Id*, *Ego* and *Super Ego*. His studies have been challenged by others, and may perhaps need some modifications in the light of the observations

of Eastern families where the upbringing of the child is somewhat different.

That the social group from which the children come has some influence in determining the personality has been studied not only in the context of delinquents coming from broken homes but also in different culture-contexts.

An objective study of the personality whether by Allport or by Benreuter's inventory, or by interviews or projective techniques do, however, sometimes give conflicting results, showing that personality being an all pervasive behaviour can not so easily be studied.

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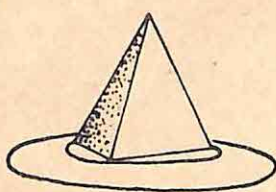
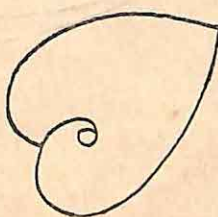
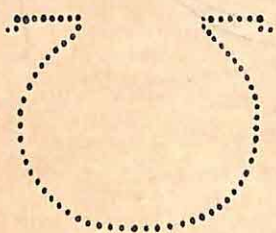
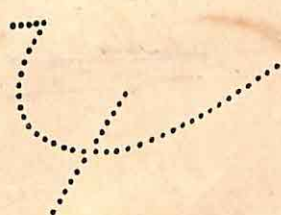
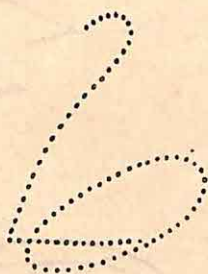
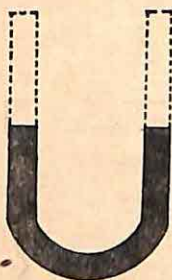
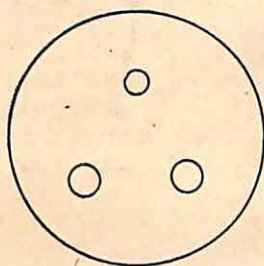
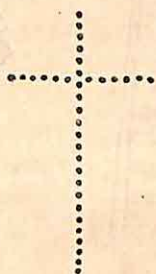
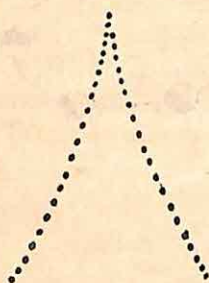
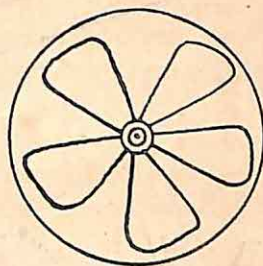
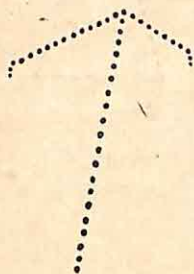
EXERCISES

1. What is personality? What are the elements of personality?
2. Give some of the views of the composition of personality.
3. What are the factors which influence personality development?

APPENDIX

GUESS WHAT IT IS

DIRECTION—



N. B. Each picture has to be presented only for a few seconds.

